This section evaluates the environmental resource areas potentially affected by the proposed Program and presents mitigation measures recommended to avoid or reduce those impacts. The evaluation is based on the findings of the technical studies completed for the proposed Program, which are listed in the Table of Contents and available for review at the Caltrans North Region Office of Environmental Management, 2800 Gateway Oaks Drive, Sacramento, California, 95833, and at the District 3 Office, 703 B Street, Marysville, California, 95901.

In accordance with the CEQA Guidelines (Section 15125), the assessment of potential impacts should be conducted against a baseline of existing environmental conditions. The purpose of this comparison is to isolate and identify specific impacts that could occur as a result of the proposed Program. For this Program EIR, the alternatives consist of the proposed Program and the No Project Alternative. The No Project Alternative reflects the conditions that would exist if none of the improvements proposed for the eight segments of US 50 and SR 89 were completed.

Cumulative impacts from past, present, and reasonably foreseeable future projects are described in Section 3.12. Impacts that could result from the proposed Program are summarized in the CEQA checklist in Appendix C.

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This section presents the existing conditions, potential impacts from the proposed Program, and mitigation related to land use, the community, traffic, recreation, and access to public and private land in the Lake Tahoe community.

3.1.1 Environmental Setting

3.1.1.1 Study Area

The study area for the community impact assessment consists of the South Lake Tahoe Census County Division (CCD), which encompasses the residential and recreational areas around the project segments within El Dorado County (Figure 3.1-1). This CCD includes the year 2000 Census Tracts 301.01, 301.02, 302, 303, 304.01, 304.02, 305.01, 305.02, and 305.03. A broad study area was used to incorporate the population within the project vicinity, which relies on US 50 and SR 89 as primary transportation and lifeline routes in and around the greater Lake Tahoe region. In addition, the South Lake Tahoe CCD provides a consistent area within which to compare Census and economic data.

Although the setting is described and impacts are discussed in the context of this study area, which encompasses all segments of the Program and the surrounding residential communities, the Program may have broader geographic impacts due to the number of visitors who travel to Lake Tahoe from outside of the region. Broader regional impacts are described in Section 3.1.3 where appropriate.

3.1.1.2 Land Use and Planning

Existing Land Use

A wide range of land uses exists in the study area (Figure 3.1-2). Along the western and southwestern portions of Lake Tahoe, from Tahoma to South Lake Tahoe, land uses are dominated by Forest Service and California State Park lands managed for wilderness access, campgrounds and beaches, historic sites, undeveloped forested/watershed areas, and recreation trails. The southwestern segments also include residential communities, primarily at Tahoma and Meeks Bay, with some residential development at the lakeshore and at or near Fallen Leaf and Cascade Lakes.

More concentrated areas of development are located primarily along the southern and eastern shores of Lake Tahoe, predominantly within the community of Meyers, the City of South Lake Tahoe, and Stateline. These communities include year-round residential housing as well as visitor-serving lodging. Commercial activities within these communities include general retail and services to support the large number of recreational and seasonal visitors to the region.

Meyers

Meyers is the first community encountered by travelers descending from the steep grade of US 50 below Echo Summit. It has been described as both a gateway and a way station for travelers entering the southern Lake Tahoe area. Meyers is an unincorporated community at the southern end of the study area, near the US 50/SR 89 intersection south of South Lake Tahoe (US 50 Segment 1 and SR 89 Segment 1). Meyers contains mostly single-family (one unit per parcel) residential lots with limited commercial development that provides retail goods and services to

the surrounding population and highway travelers. Some industrial developments lie south of the US 50/SR 89 intersection. Other land uses in Meyers include light industry and local, state, and federal public services. The US 50 corridor through Meyers includes a wide, unused right-of-way in several places, characterized by strip development set far back from the highway. Meyers is flanked by two smaller residential communities: Tahoe Paradise to the west (intersecting US 50 Segment 1), and Christmas Valley to the south (along SR 89 Segment 1) (TRPA 1998).

City of South Lake Tahoe

South Lake Tahoe, the only incorporated city in the study area, is situated at the southeastern shore of Lake Tahoe, between the Nevada state line to the east and National Forest lands to the west, north of Meyers. South Lake Tahoe contains a mix of residential, commercial, and recreational uses, including schools, beaches, and marinas. Residential development includes single-family homes, apartments, multi-family housing, and mobile home parks. Commercial activities appear typically in the form of strip development along US 50 and SR 89 and include motels; restaurants; and various service, recreational, and tourist-oriented developments. Commercial and tourism-oriented development is particularly intense along US 50 (Segment 3) at the California-Nevada border approaching the town of Stateline, which hosts several large hotel-casinos. South Lake Tahoe also has completed planned communities such as the Tahoe Keys, which is a human-made canal development that includes residences, recreational facilities, and limited commercial activity.

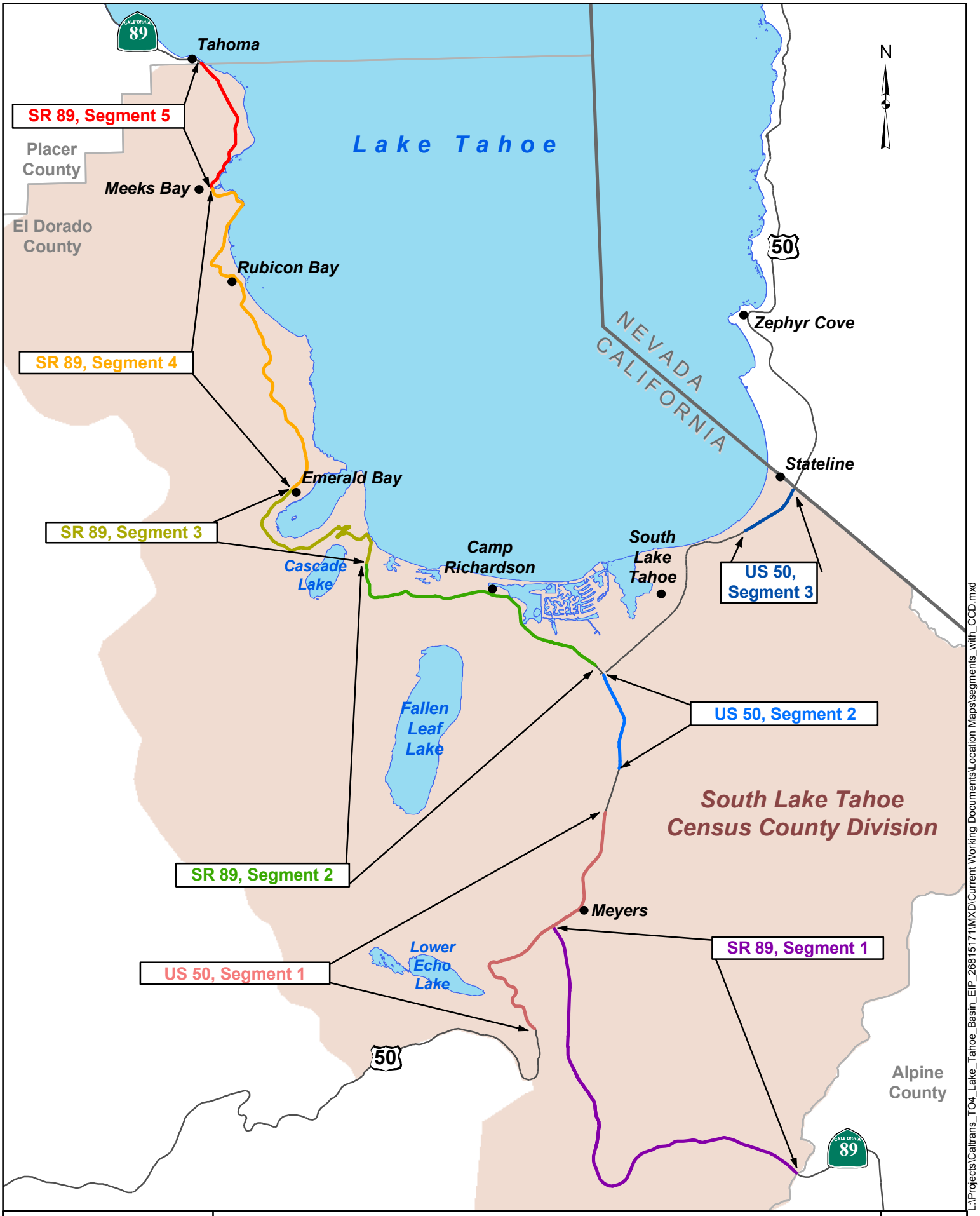
The Lake Tahoe Airport lies at the southern end of South Lake Tahoe, alongside US 50/SR 89 to the north of Meyers (US 50 Segment 2). The immediate area is characterized by sparse mixed-commercial use and industrial activity. Single-family residential development exists to the east of the airport along Pioneer Trail between Meyers and South Lake Tahoe.

Southwest Lake Tahoe

The southwest shore of Lake Tahoe extends from the western boundary of the City of South Lake Tahoe to the Placer County border in the town of Tahoma. Land uses are predominantly recreational and public lands, with limited residential and commercial development. SR 89 Segment 2, which extends between South Lake Tahoe and south of Emerald Bay, crosses through Forest Service land that is characterized by mostly recreation-oriented development. Pope Beach, Kiva Beach, and Baldwin Beach front Lake Tahoe. The area has picnic facilities, a Forest Service work center, bike trails, a marina, and the Camp Richardson resort. Vacation homes and Forest Service campgrounds at or near Fallen Leaf Lake and Cascade Lake are seasonally accessible from Segment 2.

SR 89 Segments 3 and 4, which skirt Emerald Bay and extend through D.L. Bliss State Park, contain few developed facilities beyond campgrounds (including a boat campground), picnic sites, and a few summer homes.

North of D.L. Bliss State Park (SR 89 Segments 4 and 5), the land uses along the highway are characterized by low-density residential and limited commercial development. The Rubicon Bay area has primarily single-family homes (one unit per parcel). The Meeks Bay area, managed by the U.S. Forest Service, primarily consists of the Meeks Bay Resort and other recreational development. The town of Tahoma, which lies along the border of El Dorado and Placer



Lake Tahoe Basin EIP 26815171	Community Impact Study Area	Figure 3.1-1

Lake Tahoe Basin EIP 26815171	General Land Uses in the Project Vicinity	Figure 3.1-2

Counties, contains a mixture of low-density and high-density residential development, as well as some limited commercial services and motels.

Development Trends

The TRPA has implemented strict growth and development guidelines that limit the amount of new development in the Lake Tahoe Basin. Since 1987, residential construction has been limited to the addition of 300 units per year within the Basin. As a result, the region is expected to remain relatively stable in terms of growth and development (TRPA 2002).

Between 1990 and 2000, the greater Lake Tahoe region, which includes those areas surrounding Lake Tahoe in California and Nevada, averaged a growth rate of 1.8 percent per year. This compares with a growth rate of 3.7 percent per year for Placer County and 2.4 percent per year for El Dorado County overall. Within the South Lake Tahoe CCD, population grew 15 percent between 1990 and 2000, from 29,653 to 34,042. During the same 10-year period, 1,018 additional housing units were built in the study area (TRPA 2005; U.S. Census 2000).

The greater Lake Tahoe region is expected to see an increase in an elderly population over the next several years, as the "baby boomer" generation continues to age and relocate in the area. In addition, the percentage of Latino and Asian populations, although currently small, is expected to increase (TRPA 2002).

Adopted Goals and Policies

There has long been a struggle in the Lake Tahoe region between conservation of the area's pristine beauty and resources and the expansion of residential, recreational, and tourist-oriented development. In the late 1960s, after two decades of rapid growth, the governors and lawmakers of California and Nevada approved a bi-state compact that created the TRPA to oversee orderly growth and development consistent with the preservation and enhancement of the region's unique natural and human environment.

Several regional plans have been developed for the area, including the Regional Plan for the Lake Tahoe Basin (TRPA 1987), the Meyers Community Plan (TRPA 1998), and General Plan for the City of South Lake Tahoe (City of South Lake Tahoe 2003). These plans are described in detail in Section 3.1.2.3.

3.1.1.3 Population and Housing

Over 34,000 people lived in the South Lake Tahoe CCD in 2000. Half of the population was between the ages of 25 and 54, and over a third was under the age of 25. The median age was 35.3. The Tahoe Region had 22,015 housing units in 2000, approximately 34 percent of which are for vacation or seasonal use. A third of all housing units are owner occupied (U.S. Census 2000).

Over 80 percent of Census respondents identified themselves as white, and small percentages identified themselves as Asian—mostly Filipino—and other races. Approximately one-fifth of respondents identified themselves as Hispanic (U.S. Census 2000).

The median household income for the CCD was $40,655 in 2000. There were 3,454 individuals (10.2 percent of the population) and 558 families (6.7 percent of all families) living below the poverty level in 1999 (U.S. Census 2000).

The majority of the housing in South Lake Tahoe consists of single-family, detached homes, although there is a mix of multi-family homes and condominium/apartment buildings. A majority (54 percent) of occupied housing units are owner-occupied, while a third of housing units are for vacation or seasonal use. The vast majority (88 percent) of housing units were built between 1940 and 1989, predominantly in the 1960s and 1970s. Between 1990 and 2000, 2,300 new units were built, representing 10 percent of the total existing structures. In contrast, nearly 77 percent of residents moved into their homes after 1990. According to the U.S. Census, the median household value in 2000 was $157,800; however, prices rose steeply between 2000 and 2006. According to the South Tahoe Association of Realtors, the median sale price for a home in the greater South Lake Tahoe area—extending from Emerald Bay to the Nevada–California state line—was $489,000 in May 2006. Data from the Tahoe Sierra Multiple Listing Service show that the median sale price along the west shore of Lake Tahoe from Rubicon Bay to Tahoma was even higher, at $627,500 (U.S. Census 2000; Deb Howard and Co. 2006; Welsh 2006).

3.1.1.4 Economic Conditions

Regional Characteristics

The economic bases of the Lake Tahoe region are tourism and recreation. In addition to Lake Tahoe itself, numerous state and federal parks and other facilities in the region provide a variety of outdoor recreational activities, including boating, hiking, camping, fishing, and skiing. Another large draw to the region is the hotel-casino resorts, located in Nevada and concentrated near the California borders. Millions of visitors come to the Lake Tahoe region each year, including four million skiers per season.

Travel spending in 2000 was over $1.5 billion, with nearly $500 million spent on gaming activities and nearly $180 million spent on skiing and other recreational activities. Travel spending, both directly and indirectly, accounted for approximately 74 percent of all employment and 68 percent of all earnings in the region in 2000 (TRPA 2002).

The primary source of employment in the Lake Tahoe region is the accommodation and food services industry, which includes hotel-casinos and the associated gaming industry. In 2003, this sector employed 12,508 people and provided the greatest distribution of earnings by far, at $296 million. The next-largest employment sector was retail trade, which employed 2,436 people and provided a $58 million distribution of earnings (TRPA 2005).

Unemployment in the region declined through the late 1990s, reaching 3.5 percent in 2000. At the same time, visitation increased over those years based on revenues from hotel taxes in the region (TRPA 2002).

Employment and Income

In the City of South Lake Tahoe, the largest distribution of earnings came from the accommodation and food services industry, with over $65 million of annual payroll.[3] This was followed by the health care and social assistance sector, with nearly $57 million in wages, and the retail trade sector (the largest sector in terms of revenue), with over $37 million in wages (U.S. Census 2000).

In the South Lake Tahoe CCD, the greatest percentage (38 percent) of the workforce was employed in the arts, entertainment, recreation, accommodation, and food services industries in 2000. Fourteen percent worked in the educational, health, and social services sector; and 10 percent worked in retail trade.

Many employees commute into the region for work at leisure-related jobs (including hotels, food service, and casinos). For other types of jobs, however, residents of the region commute outside of the region for work (TRPA 2005). In 2000, approximately 30 percent of workers in the study area worked outside of their state of residence; another 7 percent worked outside of their county (within their state of residence). The median commute time was just over 17 minutes; however, more than a quarter of workers commute 30 minutes or more (U.S. Census 2000).

In the City of South Lake Tahoe,[4] retail trade was the largest industrial sector, with over $316 million in sales in 2002. The accommodation and food services sector was nearly as large, with over $306 million in sales. The next-largest industry was health care and social assistance, with over $150 million in sales (U.S. Census 2000).

3.1.1.5 Community Facilities and Services

Schools

The study area has two school districts, several private schools, and the Lake Tahoe Community College. In 2000, these schools served nearly 10,000 students aged 3 and up.

The Lake Tahoe Unified School District (LTUSD) represents seven elementary, middle, and high schools. The LTUSD encompasses the City of South Lake Tahoe, the community of Meyers, and the residential areas in between (LTUSD 2006). Private schools in South Lake Tahoe include the Hope Lutheran Preschool, Saint Theresa Elementary, and Mountainside Montessori.

The Tahoe Truckee Unified School District (TTUSD) represents 11 schools north of the study area, in the towns of Truckee, Kings Beach, and Tahoe City; however, the district extends into the study area through the town of Tahoma and into the community of Meeks Bay (TTUSD 2006).

Both school districts provide bus service within the study area. TTUSD has four school bus stop locations between Tahoma and General Creek Campground along SR 89.

LTUSD provides school bus service throughout the southern extent of the study area, Meyers, and South Lake Tahoe. LTUSD uses US 50 and SR 89 for several of its routes. Adequate

[3] This information was not available for the South Lake Tahoe CCD.

[4] Data were not available for the South Lake Tahoe CCD.

functioning of the school bus system requires that students be picked up and left off at a place that is at or near a regular stop so that they may proceed safely (Caltrans 2003d).

Police, Fire, and Medical Services

Police protection is provided within the study area by three organizations: the South Lake Tahoe Police Department, the California Highway Patrol, and the El Dorado County Sheriff. The South Lake Tahoe Police Department provides services within the City of South Lake Tahoe. The California Highway Patrol and the El Dorado County Sheriff's Department provide police protection along US 50 and SR 89 and in the unincorporated areas of El Dorado County within the study area (Caltrans 2003d).

Five organizations provide fire protection within the study area:

- The Meeks Bay Fire Protection District provides fire protection along the northern limits of the study area, from the border of Placer and El Dorado Counties to Eagle Falls, near the southwestern tip of Emerald Bay.
- The Lake Valley Fire Protection District, based in Meyers, has jurisdiction over the unincorporated areas of El Dorado County within the study area. The district runs from the border of Alpine and El Dorado Counties along SR 89, to Echo Summit along US 50, to Stateline outside the City of South Lake Tahoe, and west into the Cascade Lake area.
- The Fallen Leaf Lake Volunteer Fire Department provides service to the community surrounding Fallen Leaf Lake but only operates during the summer months.
- The City of South Lake Tahoe Fire Department provides fire protection within the city limits. There are three fire stations in the city.
- The Forest Service provides fire protection for the National Forest and Wilderness areas surrounding the study area.

Medical services in the study area are provided by Barton Memorial Hospital, which is located in South Lake Tahoe near the US 50/SR 89 "Y." Barton Memorial provides 24-hour emergency services and has 75 patient beds and 48 resident beds. The hospital is part of the Barton HealthCare System, which includes various medical and health facilities in South Lake Tahoe and in Stateline (Barton HealthCare 2006).

3.1.1.6 Traffic and Transportation

Traffic

Due to the number of visitors to the Lake Tahoe region and the limited road infrastructure in the area, US 50 and SR 89 can quickly reach capacity during weekends and other peak visiting times throughout the year. Segments 1, 2, and 3 on US 50 had annual average daily traffic (ADT) rates of 13,700 to 35,500 in 2001. These counts are expected to increase to 17,500 to 43,000 by 2008 (Caltrans 2003c). The SR 89 segments had ADT counts of 3,800 to 18,000 in 2001 and are expected to increase to 4,600 to 19,800 by 2008 (Caltrans 2003d). The highest-volume segments were those in the Meyers and South Lake Tahoe vicinity.

Transit

BlueGO is a coordinated public-private transportation system that provides a variety of scheduled and on-demand transportation services throughout the southern shore area of Lake Tahoe. BlueGO provides hourly round-trip service along five bus routes in South Lake Tahoe: Routes A, B, E, and H, and the Nevada Flex Route. The routes primarily run along US 50 Segments 2 and 3 and SR 89 Segment 2. In addition, the Heavenly Ski Run Shuttle provides service along five routes in east South Lake Tahoe: the Red, Orange, Yellow, Green, and Blue routes. These routes all travel at least partially along US 50 Segment 3. Shuttles also provide service to the Nevada casinos. Additional on-demand shuttle service is available throughout South Lake Tahoe and Meyers. The Nifty 50 Trolley, which runs seasonally, has multiple routes between Emerald Bay and Zephyr Cove in Nevada. There is no regularly scheduled bus service outside of South Lake Tahoe (BlueGO 2006). Tahoe Area Regional Transit (TART) runs bus service within the West and North Shore areas and Incline Village, including a route between Meeks Bay and Tahoe City.

Access/Circulation and Parking

The project segments in the vicinity of Meyers and South Lake Tahoe serve as major arterials to access secondary roads and residential areas, as well as various commercial and business activities including the Lake Tahoe Airport. SR 89 Segments 1, 3, 4, and 5 often provide the only route to remote residential and recreational areas. While commercial activities along these routes often have off-street parking options, vehicles use roadside shoulders and pullouts to park for access to scenic vistas and recreational activities.

3.1.1.7 Parks and Recreation

The study area is surrounded by national forests and wilderness areas and contains several local and state parks and recreational areas. Near Meyers, the major parks and recreational areas include Washoe Meadows State Park and the Lake Valley State Recreational Area. South Lake Tahoe has lakefront beaches, marinas, the South Lake Tahoe Recreational Area (through which US 50 passes), and Bijou Community Park and Municipal Golf Course. West of South Lake Tahoe is national forest land, with more lakefront beaches and recreational areas, and the Camp Richardson Resort and Fallen Leaf Campground. Further west are Emerald Bay and D.L. Bliss State Parks, both of which contain campgrounds and other recreational facilities. This part of the study area is surrounded by national forest land, and farther out, national wilderness areas. The northern part of the study area near the Placer County border contains Meeks Bay and Sugar Pine Point State Park, both with campgrounds and recreational facilities.

Tahoe City has a Class I bike path that runs from the Placer/El Dorado County line south to Sugar Pine Point State Park. There are plans to extend the trail to Meeks Bay. The City of South Lake Tahoe, the Forest Service, and Caltrans have bike lanes/paths within the southern and western project segments. The bike lanes/paths are used extensively on the Tahoma and South Lake Tahoe portions of the study area. Cyclists also frequently ride along the highway shoulders (Caltrans 2003d).

3.1.2 Regulatory Setting

3.1.2.1 State

Significance Criteria

Potentially applicable CEQA significance criteria for the Program are discussed below.

Land Use and Planning

- Physically divide an established community.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

Population and Housing

- Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Community Facilities and Services

- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:
  - Fire protection.
  - Police protection.
  - Schools.
  - Parks.
  - Other public facilities.

Traffic and Transportation

- Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections).

- Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways.
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incomplete uses (e.g., farm equipment).
- Result in inadequate emergency access.
- Result in inadequate parking capacity.
- Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

Parks and Recreation

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

3.1.2.2 Regional

Land Use and Planning

In 1987, the TRPA developed a Regional Plan for the Lake Tahoe Basin (TRPA 1987). This plan, which is currently being updated, consists of various components relating air quality, water quality, transportation, and scenic resources, to overall goals and policies encompassing the entire Lake Tahoe region. Several local, state, and federal agencies contributed to the development of this plan, including the City of South Lake Tahoe and the community of Meyers, to ensure consistency in developmental activities throughout the region.

The TRPA developed environmental threshold carrying capacities to protect and enhance the quality of Lake Tahoe and other natural resources in the region. One of the goals of the TRPA Regional Plan is to "direct the amount and location of new land uses in conformance with the environmental threshold carrying capacities…" (TRPA 2004). This goal translates into a Regional Plan policy that "the total population permitted in the region at one time shall be a function of the constraints of the regional plan and the environmental threshold carrying capacities" (TRPA 2004). Other goals of the TRPA Regional Plan include the reduction of sediment, nutrient, and other pollutants into Lake Tahoe from surface runoff and other sources to maintain and improve the water quality of the lake and its contributing rivers and streams.

As part of the Regional Plan, individual planning areas throughout the Lake Tahoe region developed Plan Area Statements. The Statements provide brief descriptions of the planning area, planning statements and considerations, and a list of special policies along with details about permitted uses. Each Statement includes a policy to implement the EIP.

Population, Housing, and Community Facilities and Services

No specific environmental thresholds for socioeconomic conditions were set by the TRPA, the City of South Lake Tahoe, or other regional regulatory agencies. For the purposes of this analysis, an impact is considered significant if implementation of the Program would substantially alter the socioeconomic base of the community, particularly if such alteration creates conflicts with the existing tourism-oriented economy. Significant socioeconomic impacts might also arise if the Program would attract new residents with significantly different demographic characteristics than the existing community. The TRPA Initial Environmental Checklist was used to determine the nature and significance of impacts based on TRPA considerations for these resources.

Traffic and Transportation

Pursuant to the TRPA Code of Ordinances, potential impacts to traffic and transportation include the generation of additional vehicle trips; changes to parking facilities or the demand for these facilities; changes to existing transportation systems; alterations to circulation patterns; alterations of waterborne, rail or air traffic; or the increase in traffic hazards to motor vehicles, bicyclists or pedestrians.

Parks and Recreation

TRPA thresholds apply to recreation resources. They include:

- R1 – It shall be the policy of the TRPA governing body in development of the regional plan to preserve and enhance the high quality recreational experience, including preservation of high quality undeveloped shorezone and other natural areas. In developing the regional plan, the staff and governing body shall consider provisions for additional access, where lawful and feasible, to the shorezone and high quality undeveloped areas for low density recreational uses.
- R2 – It shall be the policy of the TRPA governing body in development of the regional plan to establish and ensure a fair share of the total basin capacity for outdoor recreation is available to the general public.

3.1.2.3 Local

Meyers Community Plan

The Meyers Community Plan was developed in 1993 and updated in 1998 as part of the TRPA Regional Plan for the Lake Tahoe Basin. It refers to the goals of the TRPA Regional Plan as well as its own goals to enhance the identity and image of Meyers as a community and as a gateway to the Lake Tahoe region. One major focus of the plan is to enhance the US 50 corridor that runs through Meyers by visually and physically improving the large rights-of-way and strip commercial development along the road. The Meyers Community Plan also contains programs to improve water quality through implementation of BMPs and improvements to SEZ lands along US 50 (TRPA 1998).

General Plan for the City of South Lake Tahoe

The 1999 General Plan for the City of South Lake Tahoe also refers to its consistency with the TRPA Regional Plan and its goal to direct development in accordance with the environmental carrying capacities of the region. A major focus of the plan is to improve the character of the US 50 corridor by transitioning the current commercial strip development of the roadway into a more traditional village character. As new development and population growth is severely limited, various incentives are provided to redirect and relocate commercial development to centralized locations. The plan includes a goal and discusses actions to conserve and improve the water quality of Lake Tahoe (City of South Lake Tahoe 2003).

3.1.3 Impacts

3.1.3.1 CEQA Considerations

Overall, the primary Program impact is related to construction activities. On a long-term basis, the Program would neither change the capacity of the existing roads (US 50 or SR 89) nor substantially change or provide new access to any lands that are not currently served by the existing roads. Following completion of construction, US 50 and SR 89 would have improvements along the road such as enhanced control and treatment of runoff and improved surfacing of roadway shoulders and pullouts. Therefore, all segments along the two highways affected by the Program would be the same as they were prior to construction in terms of traffic flow and access to existing parcels. No new areas would be accessible that are not already served by the existing highway and local road system; consequently, there would be no changes or effects with regard to future land use patterns or growth. Temporary construction impacts would occur while the planned improvements are being implemented; therefore, the impacts discussions in the following sections focus on these temporary construction activities.

Lane and road closures would be needed where work must be performed within or close to traffic lanes. Closures would also be needed to provide access and work areas sufficient to accelerate work schedules and allow completion of the proposed improvements within the limited seasonal work periods allowed in the Tahoe Basin.

The Program would result in temporary delays in traffic due to construction activities. Wherever possible, at least one lane in each direction would remain open. This may be achieved by using temporary lane width reductions (where two-way traffic can be maintained but would be slowed) or paved shoulder areas. Lanes may require temporary closure where highway shoulders are narrow or work must occur within the travel lanes. Under such circumstances, traffic may be temporarily stopped in one or both directions, and traffic would move in alternating one-way directions. As work progresses along each segment, the location of any temporary delays would shift as work is completed. Table 2-1 in Section 2 describes a conceptual staged construction lane closure scenario.

Land Use and Planning

Community Cohesion

Community cohesion generally refers to the level of commitment or attachment among the individuals, neighbors, institutions, groups, or businesses/services that make up a community. Within the study area, US 50 and SR 89 have long served as the primary routes that residents, visitors, and businesses have relied on for their transportation needs. Over the long term, the Program would have no effect on the communities that these two highways currently serve. During the construction period, roads would be open and travel would be unrestricted during all non-construction periods. Where temporary lane closures may be necessary along highway segments that have only one lane in each direction and limited shoulder widths, there could be delays in traveling through the portions of the segments that are under active construction. The delays may discourage some travelers from using the highways during those times. Although this impact could be temporarily disruptive, travelers may be delayed but would still be able to reach their intended destination. Within areas where the local circulation system is more developed, such as at Meyers, near Stateline, and at South Lake Tahoe, drivers could potentially use non-highway routes through neighborhoods during the day to avoid construction areas. There are, however, limited areas within the study area where this could effectively occur, and therefore the potential for diverted traffic to significantly disrupt existing neighborhoods or community areas would not be widespread or significant.

Overall, the Program could cause traffic delays within each specific area where construction is active each day, but it would not have a significant impact on community cohesion. Any delays would be temporary, and during construction times, access along each highway would still be available. The communities along US 50 and SR 89 have already developed along each side of these well-traveled routes and would not be further physically divided or separated.

Long-Range Planning

The Program is consistent with plans developed by the TRPA (including individual Plan Area Statements), South Lake Tahoe, Meyers, and El Dorado County. These plans stress improving water quality in the Lake Tahoe area. No long-range planning impacts would occur, and no inconsistencies with long-range TRPA land use plans have been identified.

Economic Conditions

Local Businesses

Although the temporary construction activities described above are not expected to impact existing community cohesion, they would affect travel times. Drivers may delay or be temporarily discouraged from making trips they otherwise had anticipated or planned. Segments that already have relatively confined roadway widths may be subject to alternating directions of lane closures during daily construction.

The greatest focus of commercial activity in the study area is located within the developed areas of Meyers and South Lake Tahoe. US 50 and SR 89 widen to two lanes in each direction through portions of these areas, which can better accommodate lane closures while leaving at least one through travel lane open in each direction.

The potential for impacts to local businesses would therefore be limited to temporary travel delays during active construction periods. In general, the range of effects from construction-related congestion can include discouragement of customers from traveling to a business and increased travel time for employees or deliveries. The potential for these effects to occur and/or substantially impact an existing business is not considered significant because of the limited time that the activities would take place in any single location (i.e., construction would actively progress along the highway during each construction season). Also, roadways would be kept open to the maximum extent possible, and total closure of a highway over a long time period is not expected. Mitigation measures are identified in Section 3.1.4 to further reduce or minimize potential impacts to businesses. Finally, it is noted that economic effects on their own are not normally considered a significant impact to the environment under the CEQA unless the economic effects can be associated with a significant physical environmental impact. No such impacts are anticipated.

Property Acquisition

Caltrans has preliminarily identified up to 32 parcels along US 50 and 174 parcels along SR 89 that could be affected by the Program. These parcels would be used temporarily for equipment staging or acquired permanently for construction of new basins and pullouts. The majority of takes would be partial acquisitions for stormwater basin installation, roadway and shoulder widening, roadway realignments, and utility relocation, among other needs. These parcels would be acquired from private, commercial, and public landowners. Compensation for any property acquisition would be based on fair market value. No relocations of homes or businesses are planned, and no adverse environmental impacts associated with acquisition are identified.

Community Facilities and Services

Police and Fire Protection

Program construction has the potential to cause temporary traffic congestion and delays where active construction work is under way; however, emergency vehicles are exempt from road and lane closures. Every effort would be made to allow police and fire vehicles to pass through construction zones without delay. As a result, the Program would have a less-than-significant impact on police and fire protection.

Schools

School bus service is provided throughout the study area by TTUSD and LTUSD. TTUSD has four bus stops along SR 89 between Tahoma and the Meeks Bay resort. LTUSD has four bus stops that intersect US 50 or SR 89 in South Lake Tahoe and Meyers, which are used by a number of different bus routes. In addition, LTUSD has approximately 13 bus routes that travel on portions of US 50 and SR 89, primarily Segments 1 and 2 on US 50 and Segment 1 on SR 89. Table 3.1-1 lists the bus routes that run along each segment (LTUSD 2006, TTUSD 2006).

Table 3.1-1
School Bus Routes Along US 50 and SR 89 Project Segments

Project Segment	School Bus Routes
US 50 Segment 1	6, 14, 17, 18, 21, 22, 24, 26, 29
US 50 Segment 2	6, 18, 21, 22, 24, 26
US 50 Segment 3	14, 16, 20,
SR 89 Segment 1	6, 14, 22, 24, 26
SR 89 Segment 2	7, 28
SR 89 Segment 3	None
SR 89 Segment 4	None
SR 89 Segment 5	TTUSD Bus (no route number)

Note: Routes are LTUSD buses unless otherwise noted.

Construction activities may cause temporary delays to school bus service within the project segments. In some areas, traffic flow could be reduced to one-way, alternating movements. As a result, school bus schedules would need to be revised or alternate routes would need to be found. Delays in any one location would be temporary, and the active work areas within each segment would move as construction is completed. One-lane travel in each direction would be maintained during construction activity where multiple lanes and shoulder width allow.

With the mitigation measures proposed in Section 3.1.4, the Program would have a less-than-significant impact on school bus service. No other impacts to schools would occur.

Utilities

Utility relocations may be required for the construction of the proposed facilities. This might include relocation of aboveground or belowground utilities outside of a widened roadway or right-of-way. The study area for the Program includes area outside of the roadway and right-of-way. Although any specific needs for utility relocation would not be defined until the final design of each segment, the relocations are expected to be within the areas evaluated in this EIR. Continuous utility service during construction would be required of the contractors, and no substantial disruption of service is anticipated. The Program would therefore have no impact on utility service.

Traffic and Transportation

Traffic

US 50 and SR 89 provide the main transportation and lifeline routes for the South Lake Tahoe region. Thousands of vehicles use the roads daily to access residential, commercial, and recreational areas throughout the study area. The Program would not change the capacity of US 50 or SR 89 or provide new access to any lands that are not currently served by the existing highways.

The Program would result in temporary lane closures along work areas close to traffic lanes, resulting in temporary delays. Wherever possible, at least one lane in each direction would be maintained by using lane width reductions or paved shoulder areas. Traffic flow may be

restricted to alternating, one-way movement where road shoulders are narrow or work takes place within the traffic lane; however, delays in any one area would be temporary as construction progresses along each segment.

With the implementation of mitigation measures proposed in Section 3.1.4, the Program would have less-than-significant impacts on traffic.

Transit

BlueGO provides hourly round-trip service along five bus routes in South Lake Tahoe, which primarily run along US 50 Segments 2 and 3 and SR 89 Segment 2. In addition, the Heavenly Ski Run Shuttle provides service along five routes in east South Lake Tahoe, which all travel at least partially along US 50 Segment 3.

Construction activities within these segments may cause traffic delays for public transit. However, delays would be temporary, as the active work areas within each segment would move as construction is completed at any one location. In addition, it is expected that one-lane travel in each direction would be maintained during construction activity, as US 50 and SR 89 are four lanes wide in these segments. On-demand shuttle service and the Nifty 50 Trolley would face traffic impacts when operating outside of South Lake Tahoe.

Project impacts would be less-than-significant for transit operating within South Lake Tahoe. Mitigation for these impacts is proposed in Section 3.1.4.

Access/Circulation and Parking

The Program would require that work areas be set up along US 50 and SR 89 where active construction work is taking place. As noted previously, these active work areas would transition or move along the highways within each segment as construction is performed and completed at any one location. Along some portions of both highways, parking is allowed at designated pullout areas or stretches of the highway where vehicles can safely park off of the road. Portions of the segments have areas where parking is very limited and in high demand, especially during the summer season.

For example, Segments 2, 3, 4, and 5 along SR 89 pass by popular vista points and recreational facilities. Some off-highway parking is available, but at the most popular trailheads and visitor locations, such as along Emerald Bay, parking for locations at Eagle Falls, Vikingsholm, and other trailheads can overflow. During the day, drivers would use available shoulder space on the highway. Slow-moving vehicles seeking limited parking spaces in these areas can also create increased congestion or risk of conflicts with through traffic on the highway. During construction, these shoulder areas may be impacted by the need to set up work and construction staging areas. Access to some of these recreational destinations may be further limited or restricted because of these construction needs. Slow-moving construction vehicles accessing or leaving the work areas could also impede through-traffic flow on the highway. These are potentially significant impacts, and mitigation is identified in Section 3.1.4.

Besides the typical high visitation use that the Tahoe Basin normally receives, the region is also popular for annual events that attract large groups of users and visitors. These include fairs, festivals, and sporting events (e.g., bike or running races), some of which may rely on access to or along US 50 and SR 89 within the study area. The majority of these events occur on weekends

or holidays, which should not directly conflict with active construction work. To further avoid the potential for conflicts, mitigation is proposed in Section 3.1.4.

Parks and Recreational Use

The Tahoe Basin is an important recreational destination, and beaches, campgrounds, hiking trails, and popular historic sites are all present within the overall study area. The potential for impacts to recreational resources would be limited to construction activities and possible land acquisition where a wider state right-of-way is necessary to accommodate the planned facilities or construction.

Construction impacts may include traffic delays traveling to and from recreational facilities (as previously described). All campgrounds and beaches along the segments are accessed through roads or driveways that meet either US 50 or SR 89 at an intersection, and it is expected that existing access can be maintained during construction or, at most, intermittently delayed. All of the campground areas along these routes are set back from the highway and would not be directly impacted by construction. However, construction activities starting in the morning and continuing through the end of the afternoon/day would create temporary noise levels that may be audible at the facilities, at least those areas nearest the highways. At all of the campgrounds, the construction noise level would not be severe because the campgrounds are set back from the roads. However, the noise levels may be disruptive at times because of the quiet/serene objective of the land use and the perceived sensitivity to human-made noise under such circumstances, especially construction involving heavy equipment. Mitigation is proposed in Section 3.1.4.

The existing bike path facilities should not be affected by the Program, with the potential exception of where temporary construction crosses a path or route. For safety purposes, it may be necessary to temporarily close portions of a bike path while construction takes place. This would temporarily affect use of the facilities, and mitigation is proposed in Section 3.1.4.

Environmental Justice

The Program would not have disproportionately high or adverse effects on any minority or low-income populations. No residences or businesses are being acquired, and the Program impacts would be primarily limited to increased traffic delays during construction. This would impact drivers on US 50 and SR 89 but would not disproportionately impact any specific demographic or population group within or outside of the study area. No concentrations of minority or low-income populations were observed or identified along any of the project segments during the review performed for this Program.

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have been included in this Program. Caltrans' Title VI Policy Statement is included in Appendix D.

3.1.3.2 TRPA Considerations

Land Use and Planning

The TRPA requirements for land uses are contained in Plan Area Statements. The Statements describe allowable uses and densities of development within the Lake Tahoe Basin. The proposed Program would not change the types or concentrations of land uses in the area and is therefore consistent with the TRPA land use requirements.

Population, Housing, and Community Facilities and Services

No TRPA thresholds directly relate to community impacts, population, housing, community facilities and services, or utilities and service systems. The Program would not alter the composition, location, distribution, or density of population or housing in the area. Similarly, while properties are expected to be acquired, no relocations are anticipated. Furthermore, no unplanned changes to community facilities or services would occur as a result of the Program. Based on the TRPA Code of Ordinances, no adverse impacts to these community features are anticipated.

Traffic and Transportation

Pursuant to the TRPA Code of Ordinances, potential impacts to traffic and transportation include the generation of additional vehicle trips; changes to parking facilities or the demand for these facilities; changes to existing transportation systems; alterations to circulation patterns; alterations of waterborne, rail or air traffic; or the increase in traffic hazards to motor vehicles, bicyclists or pedestrians. As described in Section 3.1.3.1, impacts to circulation and transportation facilities would occur during construction and would be temporary in nature. During construction, impacts would include reduced vehicle throughput due to fewer available traffic lanes, and reduced access to properties due to lane closures, construction of detention basins, and driveway adjustments. However, whenever possible, one lane would be kept open throughout construction areas. No sustained impact to these resources is anticipated. The Program would not increase capacity or otherwise attract additional traffic.

Parks and Recreation

The Program would not reduce recreational opportunities in the Lake Tahoe Basin. While access may be temporarily affected during construction, traffic mitigation measures will minimize inconvenience to recreationists. The Program is consistent with TRPA Thresholds R-1 (to provide high-quality recreational experience and access) and R-2 (to ensure a fair share of recreational capacity to the general public).

3.1.3.3 No Project Alternative

The No Project Alternative would consist of not implementing the EIP projects for which Caltrans is the lead agency. No impacts to land use or the community would result.

3.1.4 Avoidance, Minimization, and Mitigation

The following measures would be applied to each segment or project when they are advanced for design.

Traffic Management Plan (TMP)

A TMP would be developed as part of the final design phase of each project. The TMP would include construction restrictions, requirements, and definitions that would apply to the contractor(s) based on the type of work. These may include, as appropriate:

- During the peak summer travel season between July 1 and Labor Day, no lane closures would be allowed after noon on Fridays, or on Saturdays and Sundays. Work planned off of

the highway travel lanes that does not impede normal traffic flow would not be subject to this restriction.

- Lane closure charts would be developed for each segment or area of work to address any planned temporary lane changes or closures. These charts and schedules would be made available for public notification and information.
- Lane closures would be limited to 1.6 km (1 mile) in length or less.
- Emergency vehicle access would be maintained throughout the construction process.

Recreational Land Use

Construction activities may disturb some recreational users at sensitive land uses such as parks, trails, beaches, campgrounds, and similar publicly accessible facilities. Typical measures may include the following:

- Prior to construction, Caltrans or its contractor would provide information on the activities, locations, and types of potential disturbances and how they might affect recreation access or use should be noticed, advertised, or otherwise made publicly available so that users of the sites are aware and can plan accordingly.
- Construction activities in the vicinity of noise-sensitive uses, such as camping, shall be restricted to daytime hours.

Public and Private Property Access

Access to a property, driveway, or access road along US 50 and SR 89 shall not be blocked unless the occupant of the property (or responsible party) has been notified. Where access during the day may be impracticable during active construction, it would be provided by the end of each working day. Notification shall be made prior to commencing any construction work that could affect property access.

This section describes and evaluates existing surface water bodies and groundwater resources within the Program project limits.

3.2.1 Environmental Setting

US 50 and SR 89 within the project limits are dominated by forested upland areas, meadows, wetlands, mountainous alpine terrain, and streams. For Tahoe City, approximately 14.0 km (8.7 miles) north of the northern project limit, the average annual precipitation is 813 millimeters (32 inches), and the average annual air temperature is 6.3 degrees Celsius (°C; 43 degrees Fahrenheit [°F]), with average monthly extremes of –7.2°C (19.0°F) in January and 25.4°C (77.7°F) in July.[5] Snowfall typically occurs within the Lake Tahoe Basin between the months of October through May but can occur as early as September and as late as June.

3.2.1.1 Regional Hydrology

The climate of the Lake Tahoe Basin is dominated by strong winter Pacific storms, which yield a significant snow accumulation during the winter and early spring seasons. Summer and fall seasons are mild, with precipitation often limited to convective storms. The resulting hydrology of the Lake Tahoe Basin reflects a strong seasonal pattern of runoff to the Lake, with spring snowmelt dominating the inputs to the Lake through tributary stream flows. Occasional warm winter storms can lead to dramatic "rain on snow" events and can produce significant runoff, flooding, and erosion (Tyler and Ramsing 1997).

The following sections discuss existing natural drainages, stream groups or surface water bodies, groundwater, and local climates. Existing drainage systems include box culverts, inlets, ditches and a few collection basins; see Section 3.2.4 for the approximate locations of existing culverts within the US 50 and SR 89 project limits. All eight segments are within the Lake Tahoe Hydrologic Unit (LTHU). For the purpose of this regional hydrology discussion, all three US 50 segments are discussed together as they are in same South Lake Tahoe area with regard to local conditions and hydrology. SR 89 Segment 1 is discussed by itself because it is located the farthest south of all the segments within the Luther Pass drainage. SR 89 Segments 2 and 3 are discussed together because they are located near the southern shoreline of the South Lake Tahoe area. SR 89 Segments 4 and 5 are discussed together because they are to the north along the western shoreline of Lake Tahoe.

US 50 Segments 1, 2, and 3

Surface water bodies along these segments include lakes, meadow marshes, and wetlands. Figure 3.2-1 in Section 3.2.1.3 depicts the water bodies that intersect US 50 within the project limits. The roadway along Segment 3 ranges in elevation from 1,900 to 1,920 meters (6,230 to 6,290 feet) and slopes generally downward from east to west. The roadway along Segment 2 ranges in elevation from 1,910 to 1,934 meters (6,267 to 6,345 feet) and slopes generally downward from south to north, except where the road descends from the segment's midpoint to the US 50/SR 89 "Y" intersection. Along Segment 1, the roadway topography is within an elevation range from 1,915 to 2,182 meters (6,282 to 7,160 feet) and slopes generally downward from south to north.

[5] National Weather Service, California Climate Normals for 1914–2003 within the project limits.

SR 89 Segment 1

There are three creeks or water bodies within this segment of SR 89 (see Section 3.2.1.3). The water bodies adjacent to this segment of SR 89 include some lakes or wetlands, in particular, marsh areas within Grass Lake Creek and Big Meadows Creek, and the Upper Truckee River basin. This segment ranges in elevation from 1,920 to 2,440 meters (6,300 to 8,000 feet) and slopes generally downward from south to north.

SR 89 Segments 2 and 3

Thirteen creeks or water bodies are within this portion of SR 89. The water bodies adjacent to this part of the highway include some lakes, wetlands, and bays; specifically, Truckee Marsh, Cascade Lake, Eagle Lake, Emerald Bay, and part of Rubicon Bay. These segments range in elevations from 1,890 to 2,012 meters (6,200 to 6,600 feet) and slope generally downward from north to south.

SR 89 Segments 4 and 5

Five creeks or water bodies are within this portion of SR 89. Some of the water bodies adjacent to this part of the highway are either bays or wetlands; namely, Meeks Bay and parts of Rubicon Bay. These segments range in elevation from 1,890 to 2,100 meters (6,200 to 6,900 feet), sloping generally down from south to north.

3.2.1.2 Groundwater Resources

Groundwater information within the project limits was obtained from the U.S. Geological Survey (USGS) national groundwater database (USGS 2006). The groundwater monitoring locations identified in this section were chosen based on their close proximity to the project segments and whether measurements of groundwater levels have been reported over a period of at least 10 years. Groundwater data were not readily available for many of the segments. The data from the monitoring sites that were closest to segments for which no data were found were assumed to be representative of those segments.

Groundwater information was most readily available for the project area bordered by the US 50 and SR 89 "Y" intersection and the South Lake Tahoe shoreline where US 50 Segments 2 and 3 and SR 89 Segment 2 are located. Along US 50 Segment 2, groundwater is generally between 5 to 11 meters (15 to 35 feet) below ground surface (bgs). Groundwater is between 0 to 21 meters (0 to 70 feet) bgs along US 50 Segment 3. Along the South Lake Tahoe shoreline, groundwater is generally 3 to 6 meters (10 to 18 feet) bgs.

Aquifers in the Lake Tahoe Basin are generally small in extent. The Lake Tahoe Basin is characterized by steep topography dominated by fractured intrusive and extrusive rocks that generally lack significant groundwater resources. Significant groundwater resources appear to be limited to the alluvial and lacustrine sediments that filled the distal portions of the tributary valleys (Tyler and Ramsing 1997). These alluvial aquifers are neither vertically nor laterally extensive in the small watersheds. They are, however, thicker near the lake (Tyler and Ramsing 1997).

Groundwater transmissivity ranges from 19 to 683 square meters (m^2) (205 to 7,352 square feet) per day according to data obtained from groundwater sites in the Upper Truckee/Trout Creek vicinity (Tyler and Ramsing 1997).

Groundwater elevations at the Upper Truckee/Trout Creek area depend on the time of the year when the measurement is taken. Seepage may be encountered in rock fractures, and seepage and groundwater conditions vary according to variations in rainfall, snowmelt, pumping, construction activities, and water levels in Lake Tahoe and the Upper Truckee River.

Groundwater is the primary source of drinking water within the project area. The South Tahoe Public Utility District (STPUD) provides drinking water to the area generally crossed by US 50 Segments 1, 2, and 3 and SR 89 Segments 1 and 2 (STPUD 2004). The Tahoe City Public Utility District (TCPUD) provides water via its Rubicon System to the area generally extending from D.L. Bliss State Park to about Meeks Bay (El Dorado County Water Agency 2003). That portion of the TCPUD is crossed by SR 89 Segments 4 and 5. In the past, drinking water supply included surface water sources (including from Lake Tahoe); however, these service systems now rely on groundwater for drinking water supplies.

3.2.1.3 Surface Water Resources

The following sections discuss the waterways along the five roadway segments on SR 89 and three roadway segments on US 50. The discussions include existing waterways listed on the Lahontan Regional Water Quality Control Board's (Lahontan RWQCB's) 303(d) list, required by the 1972 CWA, which states that waterways that are included on this list do not meet water quality standards and are subject to water quality improvement actions. Beneficial uses are identified.

US 50 Segments 1, 2, and 3

Natural drainages within the project area that intersect US 50 include the Upper Truckee River and its tributaries; the Upper Truckee River intersects US 50 in three places (Figure 3.2-1). In addition, a large meadow system, likely to be a jurisdictional wetland, occupies the Upper Truckee River basin bordered by the US 50/SR 89 "Y" intersection and Lake Tahoe's southern shoreline. Other surface water bodies within the segments include Lower Echo Lake near the southernmost segment of the US 50 project limit.

SR 89 Segment 1

Sensitive water resources along this segment include stream channels and marsh/wetland areas. The drainage channels that intersect this highway segment are Grass Lake Creek, the stream segment of the Upper Truckee River going north, and Big Meadows Creek. Figure 3.2-2 indicates the approximate locations of the channel crossings and marsh/wetland areas.

Within this portion of SR 89, Big Meadows Creek is listed in the Lahontan RWQCB's 303(d) list of Water Quality Limited Segments. The pollutant/stressor in Big Meadows Creek is likely from pathogen loading from range grazing and runoff from Upper Truckee River, and/or "tourism/recreational activities not related to boating."

Figure 3.2-1. Water Bodies on US 50

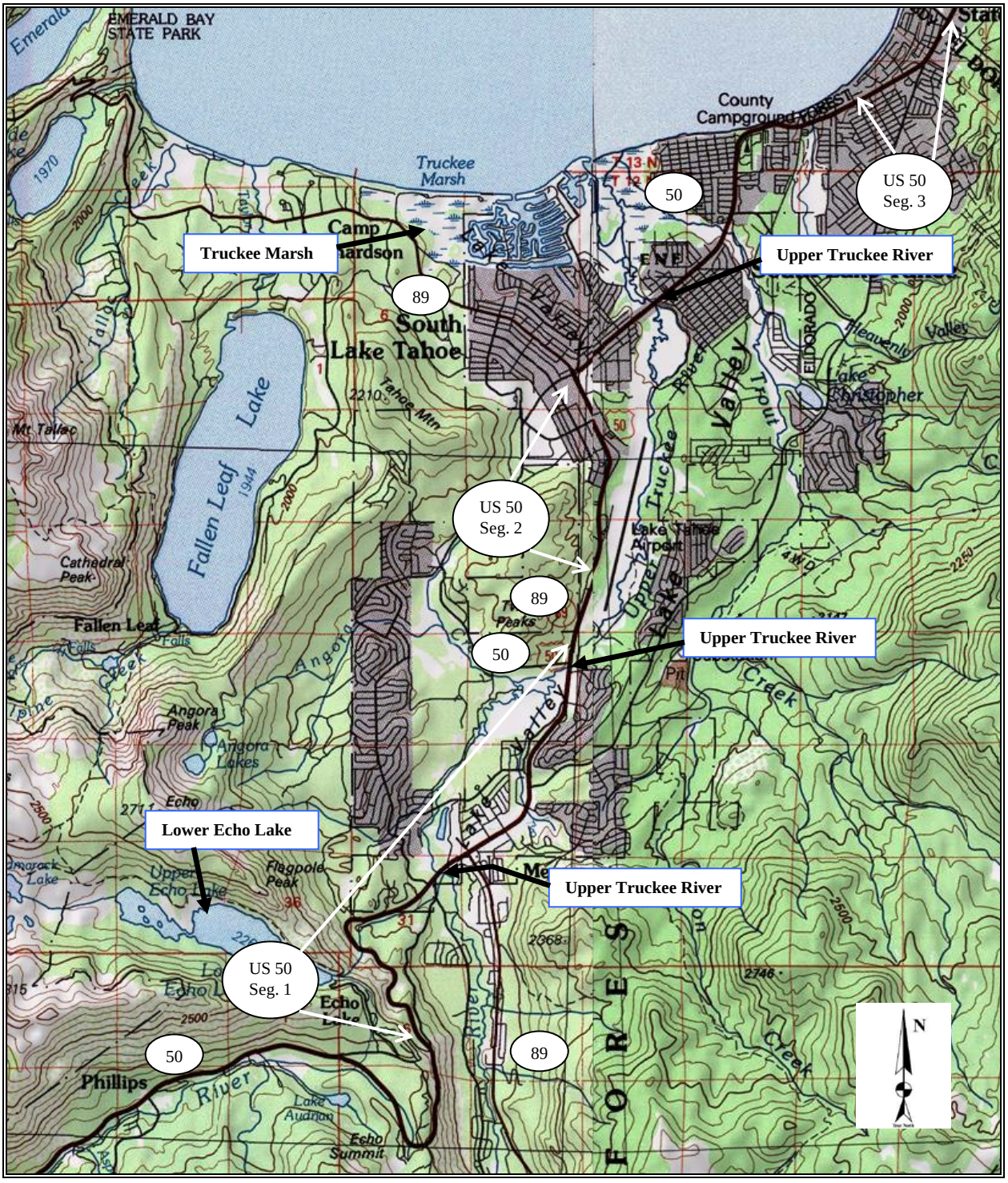
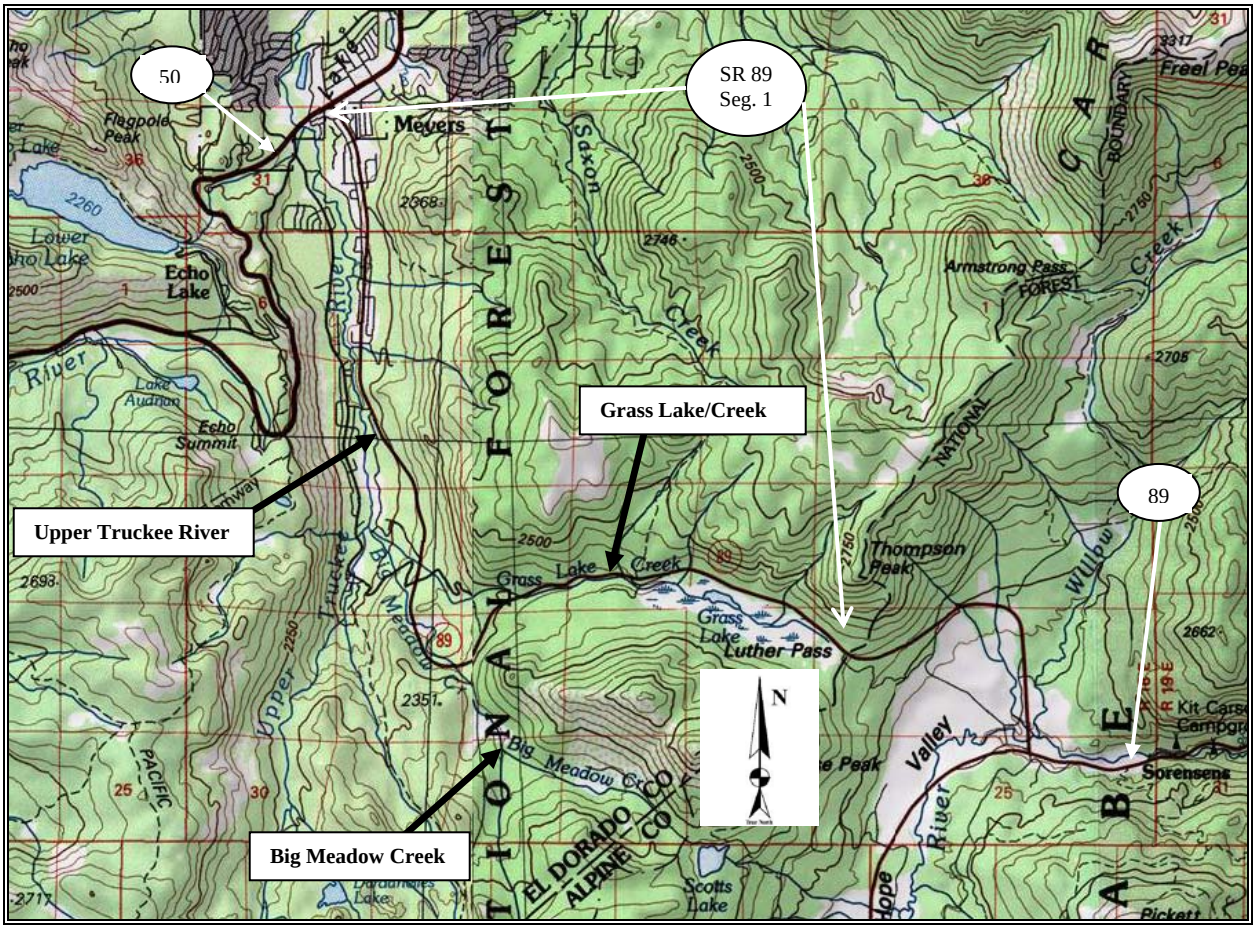


Figure 3.2-2. Water Bodies on SR 89 Segment 1

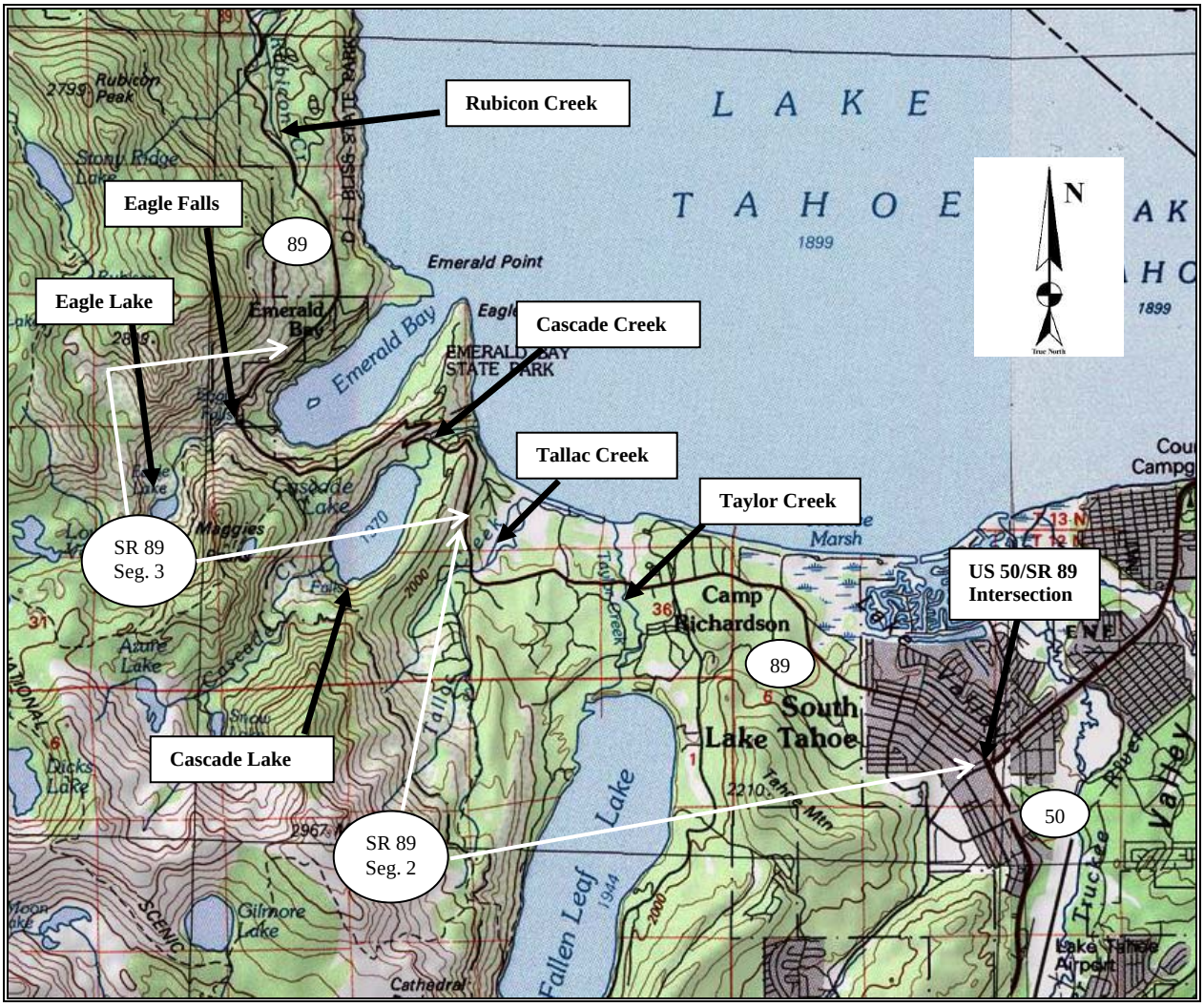


SR 89 Segments 2 and 3

Sensitive water resources along these two segments include stream channels and wetland/marsh areas. The natural drainage channels that intersect these segments are Taylor Creek, Tallac Spring Creek, Cascade Creek, Eagle Falls Creek, and the southern Rubicon Creek stream, which runs parallel to this segment of SR 89. The other water bodies within the general vicinities of these highway segments are Eagle Lake, Cascade Lake, and Emerald Bay. Figure 3.2-3 indicates the approximate locations of the stream crossings and the marsh/wetland areas.

Within this portion of SR 89, Eagle Lake and Tallac Spring Creek are listed in the Lahontan RWQCB's Section 303 (d) list of Water Quality Limited Segments. The pollutants/stressors in Eagle Lake are nitrogen and phosphorus load from runoff from highways or residential developments, on-site septic tanks, atmospheric deposits, and other non-point sources. In the segment of the Tallac Spring Creek below SR 89, pathogens from pasture grazing and riparian grazing are the main sources of the pollutant/stressor in this Water Quality Limited Segment. In the Truckee River, the main pollutant/stressor is sedimentation or siltation, which has its sources from range grazing or riparian grazing, construction/land development, channel erosion, and other non-point sources.

Figure 3.2-3. Water Bodies on SR 89 Segments 2 and 3

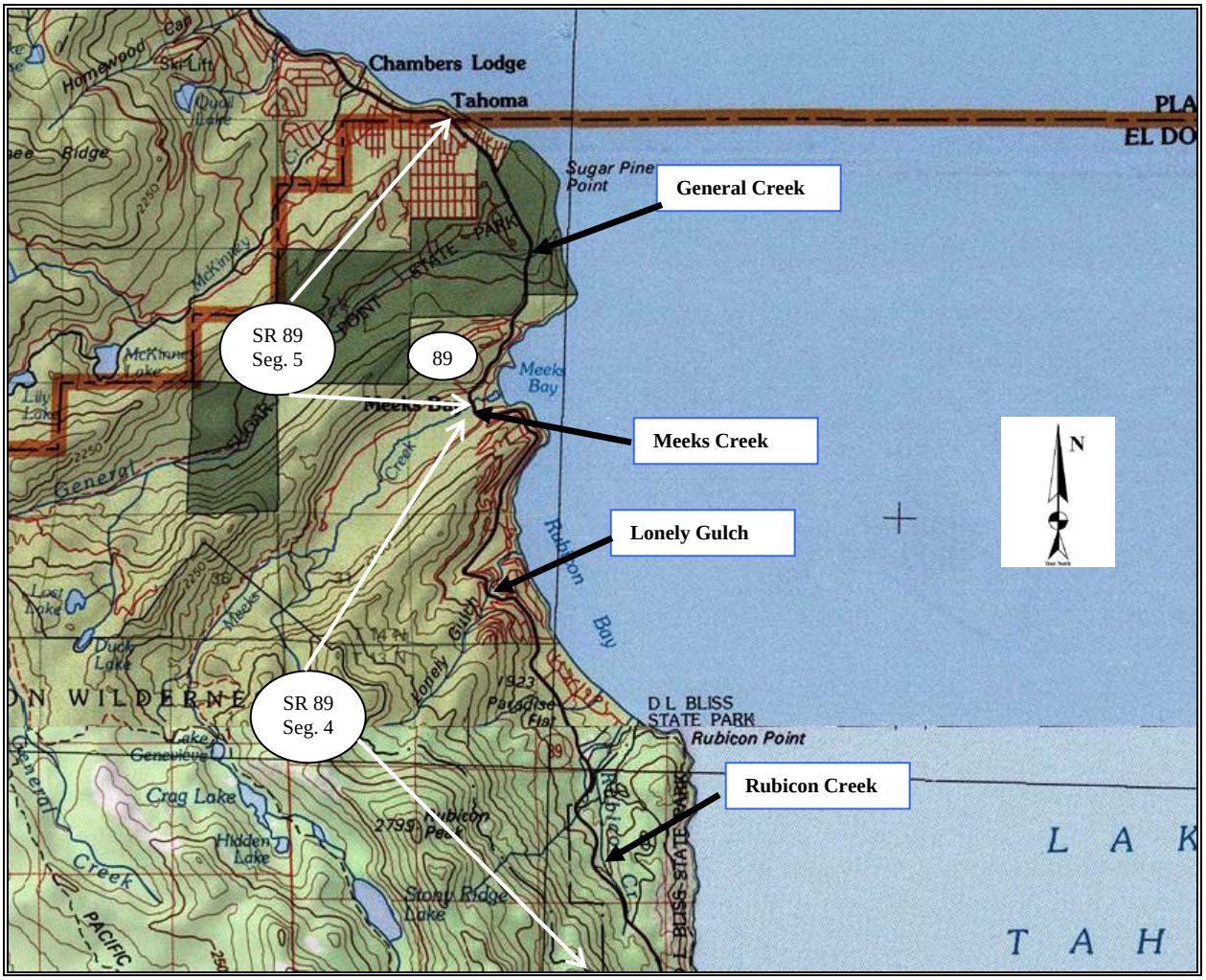


SR 89 Segments 4 and 5

Sensitive water resources along this segment include drainage and wetland/marsh areas. The natural drainage channels that intersect the highway are Lonely Gulch, Meeks Creek, General Creek, and Rubicon Creek. Figure 3.2-4 indicates the approximate locations of the channel crossings and the marsh/wetland areas.

Within this portion of SR 89, General Creek is also listed as a Water Quality Limited Segment. The pollutants/stressors present are iron and phosphorus. The source of iron is mainly from the natural environment, and the sources of phosphorus load are mainly from erosion or siltation, atmospheric deposition, and the natural environment.

Figure 3.2-4. Water Bodies on SR 89 Segments 4 and 5



3.2.1.4 Beneficial Uses of Surface Water

Beneficial uses are critical to water quality management in California. State law defines beneficial uses of California's waters that may be protected against quality degradation to include (but not be limited to): "domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves" (Water Code Section 13050[0]). Protection and enhancement of existing and potential beneficial uses are the primary goals of water quality planning. Substantial points concerning the concept of beneficial uses include the following:

- All water quality problems can be stated in terms of whether there is water of sufficient quantity or quality to protect or enhance beneficial uses.
- Beneficial uses do not include all of the reasonable uses of water. For example, disposal of wastewaters is not included as a beneficial use. This is not to say that disposal of wastewaters is a prohibited use of waters of the state; it is merely a use that cannot be satisfied to the

detriment of beneficial uses. Similarly, the use of water for the dilution of salts is not a beneficial use, although it may, in some cases, be a reasonable and desirable use of water.

- The protection and enhancement of beneficial uses require that certain quality and quantity objectives are met for surface water and groundwater.
- Fish, plants, and other wildlife, as well as humans, use water beneficially.

Table 3.2-1 lists the existing uses of the water in the surface water bodies along the areas adjacent to the segments within the Lake Tahoe Basin.

3.2.2 Regulatory Setting

3.2.2.1 Federal

The Federal Clean Water Act (CWA) established the contemporary legal foundation and structure for regulating water quality throughout the United States. The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the nation's waters." The following are some of the CWA's more important sections that relate to the proposed Program:

- Sections 303 and 304 provide for water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for any federal project that proposes an activity that may result in a discharge to waters of the United States to obtain certification from the state that the discharge will comply with other provisions of the CWA. The waters of the United States include all navigable water bodies and all water bodies that drain to a navigable water body.
- Section 402 established the NPDES, a permitting system for the discharge of any pollutant (except for dredge or fill material) into waters of the United States. The RWQCB administers this permitting program, as discussed in Section 3.2.2.2.
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the United States. The USACE administers this permit program.

The ultimate objective of the CWA is zero pollutant discharge, but it recognizes the need for a system to regulate non-zero pollutant discharges until the zero pollutant objective is feasible. Section 402 of the CWA established the NPDES for this purpose. The NPDES regulates all pollutant discharges, particularly point-source discharges, to the waters of the United States, except for dredge and fill material by issuing limited-duration permits with specifically defined requirements.

The Water Quality Act of 1987 amends the CWA to specifically include stormwater discharges as a type of point-source discharge (industrial discharge), and establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES program. This amendment added stormwater-related discharges associated with construction projects to the list of discharges that require an NPDES permit. This inclusion of stormwater-related discharge is why construction projects are subject to the requirements of the NPDES and must satisfy the requirements of all applicable NPDES permits.

Table 3.2-1
Beneficial Uses of Water in Waterways Within the Tahoe Area Hydrologic Unit

Surface Water Bodies/Hydrologic Unit	Water Body Class Modifier	Beneficial Uses																Receiving Water
		MUN	AGR	GWR	FRSH	NAV	REC-1	REC-2	COMM	COLD	WILD	BIOL	RARE	MIGR	SPWN	WQE	FLD	
Willow Creek (Herlong HA, Susan River HA, and Snowstorm Mountain HA, in Susanville HU)	Perennial Stream	X	X	X			X	X	X	X	X				X			Susan River
Grass Lake/wetland (South Tahoe HA, in Lake Tahoe HU)	Wetlands	X	X	X			X	X	X	X	X	X			X	X	X	Grass Lake Creek
Big Meadow Creek																		
Grass Lake Creek (South Tahoe HA, in Lake Tahoe HU)	Perennial Stream	X	X	X			X	X	X	X	X				X			Upper Truckee River
Saxon Creek (South Tahoe HA, in Lake Tahoe HU)	Perennial Stream	X	X	X			X	X	X	X	X			X	X			Trout Creek
Grass Lake (South Tahoe HA, in Lake Tahoe HU)	Lake	X	X	X			X	X	X	X	X	X			X			
Upper Angora Creek (South Tahoe HA, in Lake Tahoe HU)	Lake	X	X	X		X	X	X	X	X	X				X			Lower Angora Lake
Upper Truckee River (South Tahoe HA, in Lake Tahoe HU)	Perennial Stream	X	X	X		X	X	X	X	X	X			X	X			Lake Tahoe
Truckee Marsh																		
Taylor Creek (South Tahoe HA, in Lake Tahoe HU)	Perennial Stream	X	X	X			X	X	X	X	X			X	X			Lake Tahoe
Tallac Spring/Creek (South Tahoe HA, in Lake Tahoe HU)	Perennial Stream	X	X	X			X	X	X	X	X				X			Lake Tahoe
Cascade Lake (South Tahoe HA, in Lake Tahoe HU)	Lake	X				X	X	X	X	X	X		X		X			Cascade Creek
Cascade Creek (South Tahoe HA, in Lake Tahoe HU)	Perennial Stream	X	X	X			X	X	X	X	X				X			Lake Tahoe
Eagle Fall/Eagle Creek (South Tahoe HA, in Lake Tahoe HU)	Perennial Stream	X	X	X	X		X	X	X	X	X				X			Lake Tahoe
Emerald Bay																		
Rubicon Creek																		
Lonely Gulch (North Tahoe HA, in Lake Tahoe HU)	Perennial Stream																	Lake Tahoe
Echo Lake																		
Meeks Creek (North Tahoe HA, in Lake Tahoe HU)	Perennial Stream	X	X	X			X	X	X	X	X			X	X			Lake Tahoe
Meeks Bay/Marsh (South Tahoe HA, in Lake Tahoe HU)	Wetlands	X	X	X			X	X		X	X					X	X	Lake Tahoe
General Creek (North Tahoe HA, in Lake Tahoe HU)	Perennial Stream	X	X	X			X	X	X	X	X			X	X			Lake Tahoe
Lake Tahoe (Tahoe Lake Body HA, in Lake Tahoe HU)	Lake	X	X	X		X	X	X	X	X	X	X		X	X			

Source: Lahontan RWQCB Basin Plan, no date.

AGR = Agricultural Supply
BIOL—Biological Habitats
COLD = Cold Freshwater Habitat
COMM = Ocean, Commercial, and Sport Fishing
FLD—Floodwater Attenuation/Storage
FRSH = Freshwater Replenishment
GWR = Groundwater Recharge
HA = Hydrologic Area
HU = Hydrologic Unit
MIGR—Fish Migration
MUN—Municipal and Domestic Supply
NAV—Navigation
RARE—Preservation of Rare and Endangered Species
REC-1—Water Contact Recreation
REC-2—Non-contact Water Recreation
SPWN—Fish Spawning
WILD—Wildlife Habitat
WQE—Water Quality Enhancements

3.2.2.2 State

Permit Requirements

In the State of California, the SWRCB and the nine Regional Water Quality Control Boards administer the CWA regulations. In addition, the 1962 Porter-Cologne Water Quality Act provides the basis for water quality regulation in the state. The Act expanded the mandate and authority of the SWRCB and RWQCBs to regulate water quality, including the requirement of a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state. These state agencies regulate pollutant discharges through NPDES permits and serve as the primary administrator of water quality regulation requirements through their authority to authorize and enforce these permits. Specifically, the SWRCB administers statewide NPDES permits, and the RWQCBs administer local NPDES permits. The Program would be subject to the requirements of the Caltrans Statewide Permit as well as local NPDES permits. The NPDES permit requirements are all similar, and in general, call for compliance with effluent limitations at point-source discharges from any given facility (e.g., a construction project site) to surface water, groundwater, and municipal stormwater collection systems. Permit requirements also specify that all stormwater runoff through a project's limits must be treated to meet effluent limitations if the on-site stormwater mixes with off-site runoff. The Caltrans Statewide Permit is discussed in greater detail below, and the local NPDES permits required for the Program are described in Section 3.2.2.3.

Caltrans Statewide Stormwater Permit

The SWRCB issued the Caltrans Statewide NPDES Stormwater Permit (Order No. 99-06-DWQ, adopted July 15, 1999) to cover all Caltrans projects and facilities in the state. In compliance with this permit, Caltrans developed the Statewide Stormwater Management Plan (SWMP; Caltrans 2003e) to address stormwater pollution controls related to highway planning, design, construction, and maintenance activities throughout the State of California. The permit expired in 2004 and is currently undergoing SWRCB review for re-authorization, but Caltrans continues to strictly abide by its requirements.

The Caltrans SWMP describes the minimum procedures and practices that Caltrans uses to reduce the pollutants it discharges from storm drainage systems that Caltrans owns or operates, and outlines procedures and responsibilities for protecting water quality at Caltrans facilities, including the selection and implementation of BMPs. The Program would be expected to follow the guidelines and procedures outlined in the SWMP.

Under the Statewide Permit, Caltrans (i.e., the Caltrans district that is responsible for a given project) is generally not required to file a Notice of Intent or to pay filing fees. Also, in the event that a Caltrans project results in discharge of a visible plume that may contain pollutants, Caltrans must test the plume to determine its composition. If the plume contains pollutant, Caltrans must report its findings and pay the required fees for a discharge in violation of its permit requirements. However, for projects and facilities in the LTHU, the Caltrans Statewide Permit specifically refers to the LTHU NPDES Permit.

Sections 4.4 and 4.4.1 in the May 2003 SWMP (Caltrans 2003e) state that where there is potential for a storm drain system to discharge directly or indirectly to a surface water, one or

more of the five approved treatment BMPs have to be considered: biofiltration strips and swales, infiltration basins, detention devices, traction sand traps, and dry weather flow diversion. These are in addition to four Caltrans design BMPs.

If Caltrans rejects all of the five approved BMPs, Caltrans must consult with the Lahontan RWQCB to determine if an acceptable alternative BMP could be incorporated into the Program. If all five proposed BMPs are rejected, then the Program may collect runoff in "large vaults." Vaults may be considered as a variation of the detention basin. These vaults/detention basins need to be drained of the stormwater runoff within 24 to 48 hours.

Soil erosion depends not only on local conditions (soil type, slope, and vegetation) but also on construction practices. Therefore, to minimize the adverse effects of soil erosion on construction incorporating biofiltration strips and biofiltration swales may be necessary.

Regional Criteria

In addition, the governments of Nevada and California, as well as the United States, have identified the Lake Tahoe area as an Outstanding National Resource Water. Accordingly, projects and facilities in the hydrologic unit that drains to Lake Tahoe, that is, the LTHU, must satisfy more stringent requirements than in most other parts of the United States.

Significance Criteria

Potentially applicable CEQA significance criteria for the Program include the following.

- Violate any water quality standards or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Otherwise substantially degrade water quality.
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

- Inundation by seiche, tsunami, or mudflow.

3.2.2.3 Regional

Permit Requirements

All of the proposed project segments are in the jurisdiction of the Lahontan RWQCB and would be subject to the requirements of the following NPDES permits, which are discussed in greater detail below.

- Lake Tahoe Hydrologic Unit General Construction Permit
- Permit for Stormwater/Urban Runoff Discharge (Caltrans MS4 Phase I Permit)

Lake Tahoe Hydrologic Unit General Construction Permit

Construction activity is subject to the Lake Tahoe Hydrologic Unit NPDES general construction permit (Board Order 6-00-03). As is the case with most NPDES permits, the LTHU permit requires notification of construction for enrollment for projects that include clearing, grading, and excavation that will disturb of 0.4 or more hectares (1 or more acres) of soil. In such cases, the applicant must also implement an effective Stormwater Pollution Prevention Plan (SWPPP). Implementation of the plan starts with the commencement of construction and continues through the completion of the Program. Upon completion of the Program, the applicant must submit a Notice of Termination to the Lahontan RWQCB to indicate that construction is completed.

Municipal Separate Storm Sewer System (MS4) Permit

The U.S. Environmental Protection Agency (USEPA) defines a Municipal Separate Storm Sewer System (MS4) as any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over disposal of stormwater, and designed or used for collecting or conveying stormwater. As part of the NPDES, the USEPA initiated a program requiring that MS4s apply to their local RWQCBs for discharge permits. The program proceeded through two phases. Under Phase I, the program initiated permit requirements for designated municipalities with populations of 100,000 or more that maintain control of a separate storm sewer system. Phase II expanded the program to municipalities with populations less than 100,000.

The NPDES Permit for the City of South Lake Tahoe, El Dorado County, and Placer County Stormwater/Urban Runoff Discharge is an MS4 Phase I Permit. The permit requirements for construction are similar to those of the LTHU permit and the Caltrans Statewide permit. However, the MS4 Phase I permit has the additional requirement that, in order to legally discharge, applicants must reduce the pollutant content of water leaving the site or facility regardless of the origin of the pollutant; that is, the applicant may only discharge water that does not exceed the specified pollutant discharge levels even if the polluted water arrived on the site from another location.

Tahoe Regional Planning Agency

The TRPA is designated by California, Nevada, and the USEPA as the area-wide water quality planning agency under Section 208 of the federal CWA. It adopted a bi-state plan, entitled the

Water Quality Management Plan for the Lake Tahoe Region (known as the 208 Plan; TRPA n.d.). The most appropriate provisions of the 208 Plan are incorporated into the Water Quality Control Plan for the North Lahontan Basin.

The TRPA water quality thresholds are as follows:

- WQ-1 – Decrease sediment load as required to attain turbidity values not to exceed 3 Nephlometric Turbidity Units (NTU) in littoral Lake Tahoe. In addition, turbidity shall not exceed 1 NTU in shallow waters of Lake Tahoe not directly influenced by stream discharges.
- WQ-2 – Average Secchi depth, December–March, shall not be less than 33.4 meters (109.6 feet).
- WQ-3 – Annual mean phytoplankton primary productivity shall not exceed 52 gC (or gC/m^2/year, the weight in grams of carbon per square meter per year). California: algal productivity shall not be increased beyond levels recorded in 1967–1971, based on a statistical comparison of seasonal and annual mean levels.
- WQ-4 – attain a 90^{th} percentile value for suspended sediment of 60 milligrams per liter (mg/L).
- WQ-5 – Dissolved inorganic nitrogen, 0.5 mg/L; dissolved phosphorous, 0.1 mg/L; dissolved iron, 0.5 mg/L; suspended sediment, 250 mg/L.
- WQ-6 – Surface water infiltration into the groundwater shall comply with the Uniform Regional Run Off guidelines. For total nitrogen, 5 mg/L; total phosphorous, 1 mg/L; total iron, 4 mg/L; turbidity, 200 NTU; and grease and oil, 40 mg/L.
- WQ-7 – For other lakes in California-Nevada, the standards are the same as the tributary standards.

For Caltrans projects, a Memorandum of Understanding (MOU) between the TRPA and the Lahontan Regional Water Quality Control Board acknowledges that Lahontan is the lead regulator for water quality. Lahontan water quality thresholds can be found in the Lahontan Basin Plan. The Lahontan numeric effluent limits for runoff discharged to infiltration systems mirrors TRPA Threshold WQ-6. The Lahontan numeric effluent limits for surface discharges are similar to TRPA Threshold WQ-5 but also place limits of 20 NTU for turbidity and 2 mg/L for grease and oil.

3.2.3 Impacts

The potential impacts to surface waters would be temporary and would generally occur during construction activities near or directly within waterways. For perennial streams, which flow year-round, the activities involved in culvert replacement would require implementing flow diversion BMPs and other measures listed in Section 3.2.4. Nearly all work in streams during construction would occur at locations where culverts cross under the roadway and are planned for replacement or upgrading.

3.2.3.1 CEQA Considerations

Surface Water Impacts

Water Quality Standards

The goal of the proposed Program is to improve water quality of the stormwater runoff from State facilities before it reaches the waterways within the vicinities of US 50 and SR 89, with the overall goal to improve the water quality of Lake Tahoe, since it is the receiving water body of the majority of the existing waterways within the project limits. The individual actions taken would include installing stormwater collection and treatment systems such as infiltration and detention basins, sand traps, and asphalt concrete dikes to direct runoff to the treatment features. In addition, the Program would include improving conveyance of stormwater into collection and treatment systems. The construction of these improvements would involve upgrading the roadway to current design standards where feasible, including widening of the roadway shoulders.

The majority of new water quality improvements are expected to involve the installation of infiltration and detention basins along US 50 and SR 89 within each of the project segments. Infiltration basins, which are similar to shallow, earthen-lined ponds, would be located adjacent to or in close proximity to the roadways, and would receive stormwater. Infiltration basins would be constructed on relatively permeable soils that allow some or all of the collected water to infiltrate into the soils instead of continuing to run off directly into surface-water systems. When runoff exceeds the capacity of the basins, released water would flow downstream within the existing drainage. These basins would allow sediments and pollutants to settle out of the water flow, and would capture trash and other large debris. Detention basins are similar to infiltration basins, but are designed more to attenuate peak flows, and prevent or minimize downstream erosion. Traction sand traps may also be considered, and would be constructed as subsurface vaults designed to allow suspended sediment to be intercepted or settle out of runoff before it enters receiving waters. These facilities, as well as the erosion control measures listed in Section 3.2.4, would all contribute to improved water quality, and have a positive long-term benefit on meeting water quality standards.

Some of the proposed facilities also have the potential for adverse impacts. The installation of the proposed facilities and roadway improvements would involve construction activities, which have the potential for temporary adverse impacts to water quality. The following sections summarize these effects. Mitigation measures are described in more detail in Section 3.2.4.

Construction Impacts

Over the course of the Program implementation phase, each project segment may require the removal of vegetation, relocation of utilities, installation of traffic signs, construction of maintenance turnouts, installation of sedimentation/infiltration basins, replacement of culverts, widening of shoulders, and bike lane improvements. As a result of the proposed Program activities, there would be clearing of vegetation and excavation. Work would be performed seasonally. There would be an increased potential for soils exposed during construction activity to be transported during the construction phase to adjacent surface water bodies and/or open drainage channels that cross the roadway, either by wind erosion or storm runoff. The major categories of construction impacts are discussed below.

Vegetation Removal and Excavation Activities

Construction activities would require equipment staging areas and stockpiling of materials, access to the construction site, site clearance, and grading and excavation. This work would take place within and along the existing roadway, within areas where the shoulders provide sufficient room, within the state right-of-way, or within temporary construction easements. Where vegetation is cleared and grading/excavation is necessary, the potential for soil erosion is increased. Areas most vulnerable to erosion include sections of the roadway with side slopes in steep terrain, which occur on most of the segments. Eroded soils that leave the construction sites would have an adverse impact on existing water quality. These activities would be subject to the Caltrans NPDES permit, which applies to all construction activities exceeding 1 acre in size. The permit requires a SWPPP that contains specific erosion control measures, which apply throughout the construction period. These requirements would minimize erosion during the construction period.

Erosion at Drainage Channels, Culverts, and Culvert Installation

Annual and seasonal drainages within the project area intersect or run along US 50 and SR 89. Culverts beneath the roadway currently convey flow in most of these channels from reaches uphill of the roadway to reaches downhill of the roadway (see Section 3.2.4 for the approximate locations of the box culverts). The major drainage channels within the project limits of US 50 and SR 89 are Grass Lake Creek, Big Meadow Creek, Upper Truckee River, Taylor Creek, Tallac Creek, Cascade Creek, Eagle Falls Creek, Rubicon Creek and its tributaries, Lonely Gulch, Meeks Creek, and General Creek. The water bodies or marsh wetlands within the project limits are Emerald Bay and Truckee Marsh. Existing culverts along both roadways' segments are planned for replacement as needed. This would require excavation of the existing culvert and replacement at the same location, or installation of a new culvert directly adjacent, with redirection of the stream flow after completion of the installation. There is a potential for addition of sediment to the water from excavations in and around stream banks and during backfill of soil materials.

Potential for Creation of Substantial Additional Sources of Polluted Runoff

The water released or coming out of the proposed basins and stormwater collection facilities would have reduced sediments and pollutant concentrations, as discussed in previous sections. However, where stormwater runoff is collected or is more concentrated, there is an increased potential for erosion, such as areas of exposed soils or basin outlets. To avoid these effects, soil and erosion protection measures would be incorporated into the Program design, and are discussed in Section 3.2.4.

The Program would not increase traffic volumes, as it would not increase the roadway capacity of either US 50 or SR 89, and therefore would not affect on total pollutant emissions or loadings related to vehicle emissions.

Potential Impacts to Groundwater

The Program would include features such as sand traps and infiltration basins that capture surface water runoff, and retain or temporarily detain the water flow within the state right-of-way to remove sediments and pollutants. These facilities would improve surface water quality leaving the right-of-way, but would also increase the amount of surface water that percolates to

groundwater through infiltration. The allowable pollutant levels in this infiltrating water could be bound by TRPA Threshold WQ6, which establishes standards for allowable levels of total nitrogen, total phosphorus, total iron, turbidity, and grease and oil in surface discharge to groundwater.

Data from the Lake Tahoe Interagency Monitoring Program (LTIMP) indicate that groundwater in the Lake Tahoe area generally has higher concentrations of measured pollutants than surface water in the region (Table 3.2-2) (Tyler and Ramsing 1997). The LTIMP oversees a groundwater monitoring program in the Lake Tahoe Basin that provides data to regulatory agencies to assist in the implementation of their programs and to meet the requirements of pollution control policies. In particular, two member LTIMP agencies—the USGS and the TRPA—established a groundwater monitoring network with 32 sampling sites in 1990 to provide a long-term database of groundwater characteristics. According to past groundwater studies, the concentrations of nitrogen, phosphorus, and iron were higher in the groundwater than in the Lake. The studies included field measurements of temperature, pH, dissolved oxygen, specific conductance, and water levels. In addition, the components of the studies included laboratory measurements of dissolved nutrients, including iron.

Table 3.2-2
Average Dissolved Nitrate and Phosphate in Three Lake Tahoe Watersheds

Watershed		Dissolved Nitrate (NO_3) (µg/L)	Phosphate (PO_4^2) (µg/L)
Ward Creek	Groundwater	27-264	44
	Surface Water	12	8.0
Upper Truckee/Trout Creeks	Groundwater	466	18
	Surface Water	23	9
Incline Creek	Groundwater	2,400	54
	Surface Water	26	10

Source: Tyler and Ramsing 1997

Note: Calculated from USGS Water Data, Nevada, Water Years 1989–1995.

µg/L = micrograms per liter

Overall, pollutant loads in groundwater would not be adversely impacted by implementing the proposed improvements that divert, collect, and treat stormwater runoff from road surfaces that would otherwise infiltrate or percolate into the Tahoe area aquifers. Implementing the proposed Program would increase the amount of sediment-entrained pollutants that would be filtered out of surface water in sand traps and catchment basins; this would help reduce or remove these pollutants from entering groundwater. The Program's potential to impact pollutant levels in groundwater from percolation from detention and retention basins would be insignificant because the streams that recharge groundwater aquifers in the Tahoe area receive substantial infiltration from sources outside of the project limits (i.e., the general watershed, outside of the right-of-way and roadway surfaces of US 50 and SR 89) in comparison to the area actually affected within the proposed right-of-way.

In 2005 and 2006, following initial scoping, field reviews of the stormwater collection and treatment elements of the Program were performed with TRPA and Lahontan RWQCB

representatives. Input from these agencies was considered, and potential basins were added, eliminated, or relocated based on site-specific field conditions. The Caltrans Tahoe Basin Team, which includes Caltrans, TRPA, and Lahontan RWQCB representatives, meets on issues that are common to the planning, design, construction, and maintenance activities related to Caltrans projects in the Lake Tahoe Basin.

Based on field observations (Caltrans 2003c, 2003d), groundwater should generally not be an issue for the proposed shoulder widening. Seepage was not observed in the existing cut or fill slopes. Depending on the time of year, seepage may be encountered in rock fractures. Seepage and groundwater conditions would vary according to variations in rainfall, snowmelt, pumping, construction activities, and water levels in Lake Tahoe and the Upper Truckee River.

Post-Construction Stormwater Runoff Quality

As noted previously, the Program would generally improve the quality of stormwater that runs off roadway surfaces and ultimately leaves the state highway right-of-way. The method by which the treatment features that are components of the Program would improve the quality of stormwater runoff depends on their design and intended function.

Existing stormwater along the Program segments of US 50 and SR 89 already contains sediments and pollutants, as both roadways are built along mountainous terrain that can be a natural source of readily erodible soil and sediment draining onto roadway surfaces. The proposed asphalt concrete dikes along the lengths of most roadway segments would improve flow by directing sheet and spreading flow from road surfaces into channelized flow along the dikes, thereby reducing the retention and accumulation of sediments on road surfaces. Upon reaching collection traction sand traps installed at the tail end or intermediate portion of most dikes, the sand traps would filter constituent pollutants out of the stormwater and allow them to settle to the bottom of the partitioned sand traps/sand collection vaults. Where stormwater is conveyed into infiltration basins, the basins would isolate debris and other solid material and allow retained water to percolate into the ground; if the water is conveyed into detention basins or ponds, the basins would allow the sand and sediments to settle out of the detained stormwater. New channels may be lined with rock to allow conveyance of water while minimizing exposure of soils. In all cases, the effectiveness of the proposed systems for improving water quality would be site specific, but overall water quality runoff would improve. This would have a beneficial effect on the quality of water that ultimately drains into Lake Tahoe.

Traction sand traps may be considered. Also known as sand vaults, these devices provide a water quality benefit by collecting sand from runoff that has entrained roadway pollutants such as oils and grease and heavy metals (such as lead), which may adsorb onto the sand particles. The effectiveness of these traps depends on their design and capability to handle stormwater volumes and the maintenance frequency (cleaning of the sand/trap is necessary to maintain their function).

3.2.3.2 TRPA Considerations

The primary objective of the Program is to comply with NPDES permit requirements and improve stormwater treatment on and along the study area. Newly installed detention basins and drainage facilities would capture many pollutants before they enter the lake. These improvements would outweigh any potential adverse effects associated with increases in

impervious surfaces. Therefore, no adverse impacts to overall water quality are expected as a result of the Program. The Program would benefit water quality in the region.

3.2.3.3 No Project Alternative

The No Project Alternative would consist of not implementing the proposed Program for which Caltrans is the lead agency. Caltrans is required to comply with the Statewide NPDES permit issued by SWRCB and could potentially become in violation of the requirements of this permit if the Program is not constructed.

The No Project Alternative would result in a failure to meet TRPA environmental thresholds. This alternative would not address the environmental problems facing the Lake Tahoe Basin, and therefore is not considered a viable alternative with respect to the purpose and need.

The No Project Alternative would have less immediate impacts to the resources discussed in this report, including biological and cultural resources, and parklands.

The description of work encompasses the only proposed Program alternative. A No Project Alternative could potentially lead to increased levels of turbidity in Lake Tahoe, which would decrease the clarity of the lake over time. Since the early 1960s, Lake Tahoe has lost an estimated average of 0.3 meter (1 foot) of clarity each year, as measured by secchi disk (Strobel, n.d.).

3.2.4 Avoidance, Minimization, and Mitigation

In general, the Program is being implemented to control and improve water quality runoff from the state right-of-way and road surfaces for US 50 and SR 89 within the defined segments in order to meet the goals of the Tahoe EIP program and comply with NPDES requirements. The Program would have a beneficial effect to water quality runoff; however, as for any major construction project, there is the potential for some adverse impacts. The following measures would avoid or minimize the impacts identified in Section 3.2.3.

Drainage systems should be designed to transport stormwater runoff to be collected and treated in structures located outside of delineated SEZs and wetlands. Woody riparian vegetation growing at the waters edge would be kept in place to provide cover for aquatic organisms. Removal of woody stream bank vegetation would need to be avoided to the greatest extent possible.

Pollution prevention measures may be implemented to protect surface water quality degradation to the existing surface water resources within the SR 89 and US 50 project limits, and to prevent erosion of bare soils and potential non-point source pollutant contribution. Typical measures may include the following:

- The Program proposes to install sedimentation/infiltration basins. Infiltration basins are most effective where the soil is porous and can infiltrate the stormwater within 24 to 48 hours. A minimum acceptable spacing between a proposed infiltration basin invert and the maximum seasonal high groundwater is 10 feet, unless otherwise approved by the RWQCB. Caltrans is proceeding with site-specific soil studies to determine suitable locations for infiltration basins and would use the results of those studies to refine the proposed basins and their locations. If

the soil condition does not allow for these requirements, consultation with the Lahontan RWQCB during the early stages of planning is recommended.

- Work in streams should be done after seasonal flows have stopped (see next bullet). In perennial streams, a temporary diversion would be required and one or more of the following options can be used:
  - Culverts may be constructed adjacent to the existing culvert (streamflow would continue through the existing culvert during construction of new culvert). Under these circumstances, the stream channel would be rerouted upon completion of the culvert installation/replacement and water would then be diverted through the new culvert.
  - Coffer dams may be constructed and a temporary pipe or channel installed to direct streamflow to an adjacent cross culvert.
  - Where streamflow is minimal, a coffer dam may be constructed upstream of the culvert and streamflow pumped into a water truck for discharge into the downstream channel or onto adjacent soil for infiltration/evaporation.
  - At culverts that will be lined, construction may occur without diversion.
- TRPA and Lahontan RWQCB regulations limit grading to 3 cubic yards from October 15 to May 1 of each year. Unless a variance is obtained, construction activities shall conform to this requirement.
- To treat and improve water quality on-site, biofiltration strips and biofiltration swales within the project area should be considered.
- Special attention must be paid when handling and storing contaminated soil, including soil contaminated with aerially deposited lead. The quantity of contaminated soil, its level of contamination, where it will be stored, and when this activity will take place are all stormwater pollution concerns and should be described in detail in the SWPPP to be prepared by construction contractors.
- If the Program has the potential to encounter groundwater or may involve non-stormwater discharges, consultation with the RWQCB or California Department of Toxic Substances Control may be appropriate. A Project-specific Waste Discharge Permit may be required if substantial dewatering is to take place.
- If the Program work limits include or are close to water sensitive areas (wetlands, waterways, etc.) that may be affected during construction activities, or USACE and/or CDFG permits are required, then a 401 Water Quality Certification from the Lahontan RWQCB is required and will be obtained prior to work. The 401 Certification is not required when a sensitive area will not be affected.
- If the Program involves pavement grinding/cutting operations, the discharge from this operation has to be dealt with in coordination with the Lahontan RWQCB.

Temporary/Construction Phase BMPs

The following BMPs are suggested for controlling the potential impacts to existing waterways or storm drainage facilities that are typically included in a SWPPP that is in compliance with regional NPDES requirements for the construction phase of the Program.

Protections for stream banks in creeks are recommended where creeks intersect US 50 or SR 89 and at sites with cross-culverts that are proposed to be replaced or widened. Construction work at creek crossings often requires excavations on stream banks or next to the banks, which could lead to increased sediment load into the waterways. Protections for stream banks can potentially increase stream bank stabilization and preservation of riparian habitats. Geotextile fabrics and erosion control blankets/mats are suggested stream bank BMPs that can be installed. In addition, a line of stacked sandbag/gravel bag berms can be placed along the channel banks to intercept and slow the flow of sediment-laden sheet flow runoff on road surfaces. For streambeds or creek embankments subject to unavoidable disturbances, restoration and/or revegetation with weed-free native plant species is required.

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This section presents a discussion of the visual character in the vicinity of the highway segments, along with a description of potential impacts and mitigation measures proposed to preserve the quality of the visual resources in accordance with state and regional regulatory guidance.

3.3.1 Environmental Setting

The visual environment is defined as the area along US 50 and SR 89 from which proposed Program facilities could be seen by the public. The viewshed for the Program was determined by visual inspection of existing conditions along US 50 and SR 89, including existing infiltration basins that are representative of the changes proposed with the Program. The purpose of this section is to define the quality of the visual environment within the project limits.

3.3.1.1 Evaluation of Visual Quality

Visual quality is a measure of the excellence of a view. For this analysis, visual quality was evaluated using the guidelines set forth in *Visual Impact Assessment for Highway Projects* (FHWA 1983) and the analysis of two previous TRPA studies. The *Lake Tahoe Environmental Threshold Study Report* (TRPA 1982, Scenic Quality Ratings: Visual Quality from Roadways) analyzed and quantified the Lake Tahoe Basin scenic resources that are visible from the roads within the regional area. The *2001 Threshold Evaluation Report* (TRPA 2002, Chapter 8, Appendix 1, Travel Route Ratings) analyzed and quantified the visual character and quality of the environment as seen from the road using six categories: Man-Made Features, Roadway Distractions, Road Structure, Lake Views, Landscape Views, and Variety. Each study measured visual quality using a common baseline of numbered Roadway Units (Forest Service 1970), the locations of which are shown in Figure 3.3-1. The 1982 study used numbers from 1 to 3 to designate low to high degrees of visual quality, and the 2001 study designations ranged from 5 to 30. Table 3.3-1 lists the Roadway Units, the composite Roadway Threshold Numbers assigned in the 2001 study, and the Visual Resource Ratings identified in the 1982 study. These ratings represent the existing visual quality at the locations evaluated in the TRPA studies.

The visual environment was assessed for views from sensitive receptors in the areas of US 50 and SR 89 and from areas within the project segments that would be representative of a range of views of proposed Program facilities. Potential viewer sensitivity or response was estimated based on the "use" of the viewshed. Sensitive receptors in the vicinities of US 50 and SR 89 include residents of single-family homes; users of recreation trails, resorts, and campgrounds; motorists on scenic routes; and boaters on Lake Tahoe.

3.3.1.2 Existing Visual Environment

This section describes the existing visual environment for the study area, which consists of the eight project segments shown in Figure 1-1 and the surrounding areas. Figure 3.3-2 is an aerial photo that shows the locations of representative views along US 50 and SR 89. Figures 3.3-3A through 3.3-3F are photographs of these views and of existing drainage facilities and erosion control measures similar to those proposed by the Program.

Existing Landscape

Lake Tahoe is high within the Sierra Nevada mountain range, with a lake surface elevation of 1,897 meters (6,225 feet) above sea level. Peaks with elevations of greater than 3,050 meters

(10,000 feet) surround the Lake. Conifer forests are visible around the Lake and on the mountain slopes. Distant views of mountains and high-elevation forests of red fir and lodgepole pine appear relatively undisturbed. At lower elevations, the natural landscape has been altered over time as buildings and roads have been constructed. Native plant species have been replaced by, or augmented with, introduced species planted by individual property owners.

Much of the Lake Tahoe Basin was deforested for lumber needed for the silver and gold mining operations of the Comstock Lode starting in the 1859. The forests regenerated naturally, but fir trees replaced the earlier 200- to 500-year-old pine forests.

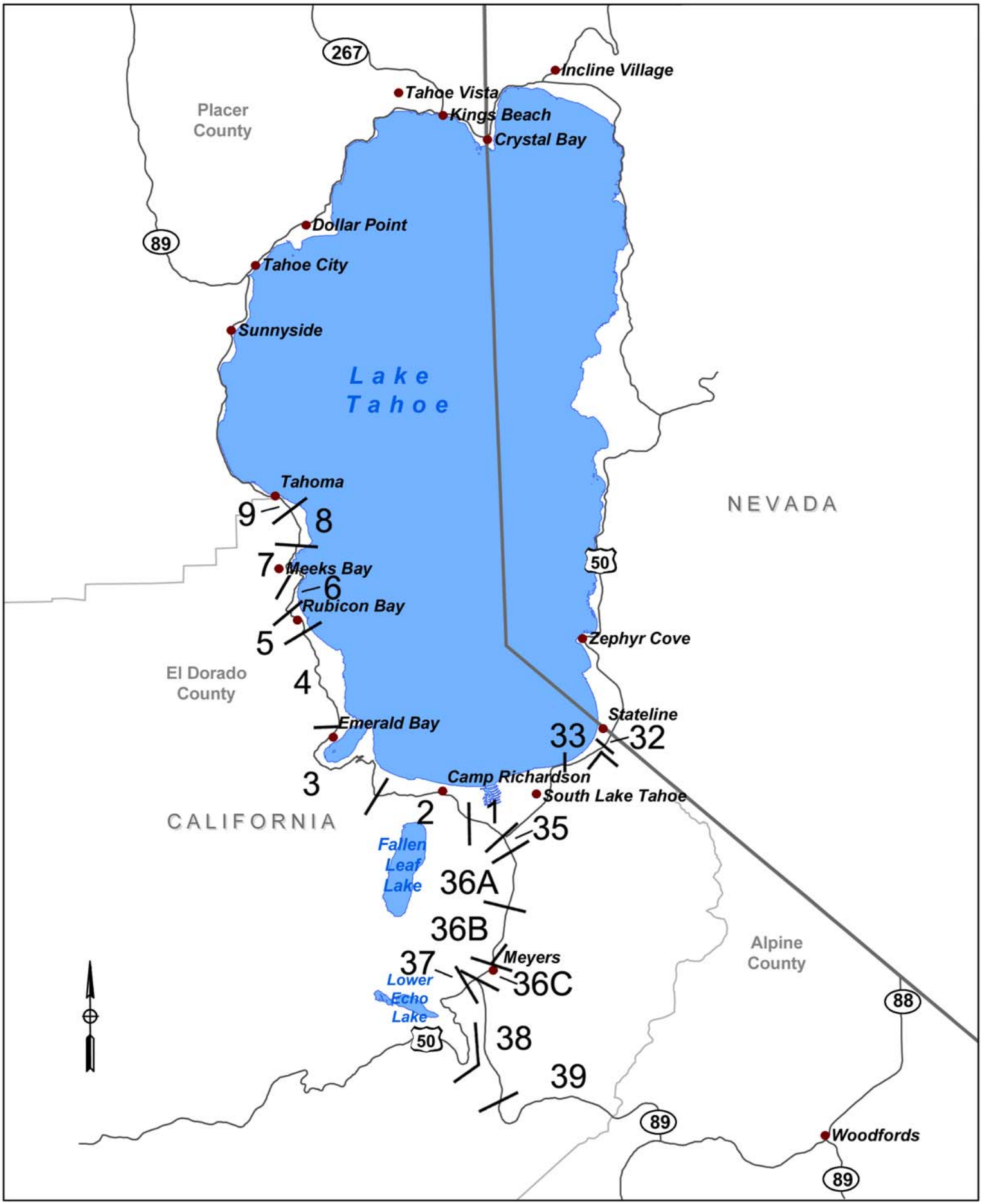
US 50 and SR 89

As shown on Figure 3.3-2, US 50 and SR 89 within the project area approach Lake Tahoe from the south, split at the South Lake Tahoe "Y," and follow the east and west shorelines, respectively. US 50 north of Echo Summit descends steeply through the Meyers Grade, and then traverses relatively even terrain through the developed commercial areas of South Lake Tahoe and Stateline.

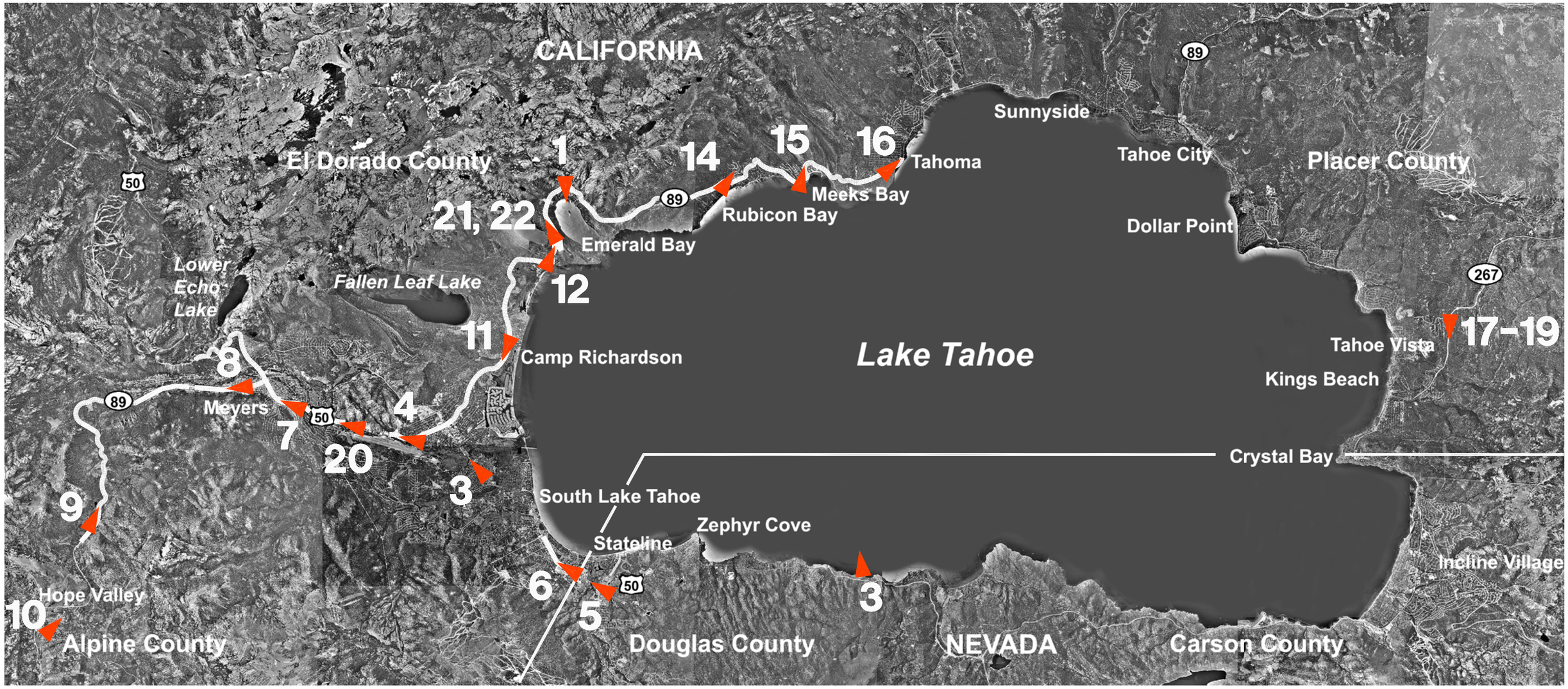
SR 89 passes through the Carson Pass mountain range and Hope Valley before entering the project limits near Luther Pass, and then descends to the community of Meyers and its junction with US 50. The first segment of SR 89 passes through mixed conifer forests that are relatively undisturbed except for the highway, until reaching the residential area at Meyers. From Meyers, US 50 and SR 89 merge and descend gently in elevation through developed areas into South Lake Tahoe and the "Y" intersection. After the highways split off again at the "Y" intersection, SR 89 continues northwest through relatively flat forested and meadow areas at and surrounding Camp Richardson. These areas support native grasses, shrubs, and Sierran mixed-conifer pine forests. North of the Fallen Leaf Lake area, SR 89 ascends steeply to vistas of Emerald Bay. Where SR 89 traverses the higher-elevation slopes above the Bay, long-range views of the mountains and natural landscaped features are available. Sloped areas adjacent to the highway are undisturbed with the exception of erosion and installed stabilization measures. North of Emerald Bay, SR 89 descends through forested State Park land (D. L. Bliss). It continues north through the communities of Rubicon and Meeks Bays, Sugar Pine State Park, and to the northern project limit at Tahoma.

Urban Structures

The greatest concentration, density, and vertical mass of urban structures are in the vicinity of the casinos at the Nevada state line. One- and two-story commercial buildings lie along US 50 between the state line and the intersection of US 50 and SR 89. The density of buildings decreases substantially as US 50 proceeds south of the US 50/SR 89 intersection, and structures are not visible after the Lake Tahoe Airport until the town of Meyers. Buildings visible from SR 89 after it proceeds east from Meyers consist of one-story residences behind a forested edge of road. No buildings are visible east of Portal Road. Structures between Portal Road and the eastern project limit consist of occasional highway and Forest Service signs.



Lake Tahoe Basin EIP	TRPA Visual Assessment Roadway Units	Figure 3.3-1
26815171		



Lake Tahoe Basin EIP 26815171	**View Location Map**	**Figure 3.3-2**

VIEW 1: View East at SR 89 of Emerald Bay

VIEW 2: View West at US 50 of Lake Tahoe

VIEW 3: View South at US 50 of South Lake Tahoe

VIEW 4: View South of SR 89 South of the "Y"

Lake Tahoe Basin EIP 26815171	**Views 1 to 4**	Figure 3.3–3A

VIEW 5: View South at State Line

VIEW 6: View South at US 50 of Commercial Land Use South of State Line

VIEW 7: View South at US 50 of Meyers

VIEW 8: View East at SR 89 East of Meyers

Lake Tahoe Basin EIP	**Views 5 to 8**	Figure 3.3–3B
26815171		

VIEW 9: View North at SR 89

VIEW 10: View North at SR 89 of Hope Valley

VIEW 11: View South at SR 89 of Camp Richardson

VIEW 12: View North of SR 89

Lake Tahoe Basin EIP 26815171	**Views 9 to 12**	Figure 3.3-3C

VIEW 13: View North at SR 89 of Rock Blanket

VIEW 14: View West at SR 89 of Rubicon Bay Single-Family Residence

VIEW 15: View North at SR 89 of Meeks Bay Resort

VIEW 16: View North of SR 89 of Tahoma

Lake Tahoe Basin EIP 26815171	**Views 13 to 16**	Figure 3.3–3D

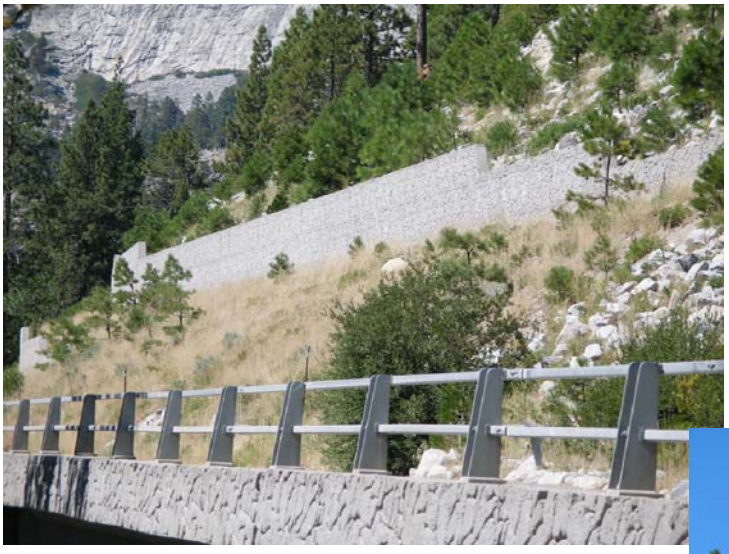
VIEW 17: View South of Concrete Drainage Structures and Filtration Basin Access Road Installed on SR 267

VIEW 18: View South at SR 267 of Filtration Basin

VIEW 19: View South at SR 267 at Drainage Structures

VIEW 20: View South of US 50 / SR 89 of Filtration Basin

Lake Tahoe Basin EIP 26815171	**Views 17 to 20**	Figure 3.3-3E



VIEW 21: View at SR 89 of HIghway Retaining Wall

VIEW 22: View at SR 89 of Rock Blanket

Lake Tahoe Basin EIP 26815171	**Views 21 to 22**	Figure 3.3–3F

Table 3.3-1
Potential Impacts to TRPA Visual Quality Ratings from Proposed Program Facilities

Roadway Unit Numbers with 2001 Updates	Roadway Unit Location Names	TRPA 2002[a]	TRPA 1982[b]	Proposed Improvements and Potential Visual Impacts to TRPA Ratings																			
		Composite Roadway Threshold Numbers	Visual Resources Ratings from Roadway	Widen Shoulders 1.2 Meters (4 Feet) Minimum with AC Dike to Convey Stormwater Runoff		Construct Retaining Walls Where Required to Facilitate Shoulder Widening		Pave Existing Unsurfaced Pullouts		Rehabilitate Existing and Install New Drainage Systems		Install Traction Sand Traps		Construct Infiltration Basins		Provide Rock Slope Protect		Flatten and Protect Erodible Slopes for Erosion Control		Revegetate Bare or Erodible Areas		Allow Sheet Flow Off Road at Longitudinal Basins and Spreading Water into SEZ Areas		Pave All Driveway Connections Within State Right-of-Way	
		A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
1	Tahoe Valley (City of South Lake Tahoe)	12	2	NC	NC	-	-	-	-	NC	NC	NC	NC	NC	NC	-	-	-	-	+	+	NC	NC	NC	NC
2	Camp Richardson (El Dorado County)	18	3	-	-	-	-	-	-	NC	NC	-	-	-	-	-	-	-	-	+	+	NC	NC	NC	NC
3	Emerald Bay (El Dorado County)	26.5	3+	-	-	-	-	-	-	NC	NC	-	-	-	-	-	-	-	-	+	+	NC	NC	NC	NC
4	D.L. Bliss State Park (El Dorado County)	21	3	-	-	-	-	-	-	NC	NC	-	-	-	-	-	-	-	-	+	+	NC	NC	NC	NC
5	Rubicon Bay (El Dorado County)	18	2	-	-	-	-	-	-	NC	NC	-	-	-	-	-	-	-	-	+	+	NC	NC	NC	NC
6	Lonely Gulch (El Dorado County)	18	2	-	-	-	-	-	-	NC	NC	-	-	-	-	-	-	-	-	+	+	NC	NC	NC	NC
7	Meeks Bay (El Dorado County)	14	3	NC	NC	-	-	NC	NC	NC	NC	NC	NC	NC	NC	-	-	-	-	+	+	NC	NC	NC	NC
8	Sugar Pine Point (El Dorado County)	23	3	-	-	-	-	-	-	NC	NC	-	-	-	-	-	-	-	-	+	+	NC	NC	NC	NC
9	Tahoma (Placer County)	14	1	NC	NC	-	-	NC	NC	NC	NC	NC	NC	NC	NC	-	-	-	-	+	+	NC	NC	NC	NC
32	Casino Area (Douglas County)	11.5	1	NC	NC	-	-	NC	NC	NC	NC	NC	NC	NC	NC	-	-	-	-	+	+	NC	NC	NC	NC
33	The Strip (City of South Lake Tahoe)	11.5	1	-	-	-	-	NC	NC	NC	NC	NC	NC	NC	NC	-	-	-	-	+	+	NC	NC	NC	NC
35	Al Tahoe (City of South Lake Tahoe)	16	2	-	-	-	-	NC	NC	NC	NC	NC	NC	NC	NC	-	-	-	-	+	+	NC	NC	NC	NC
36A	Airport Area (El Dorado County)	10.5	(Previous Unit 36) 2	-	-	-	-	-	-	NC	NC	-	-	-	-	-	-	-	-	+	+	NC	NC	NC	NC
36B	Lake Valley (El Dorado County)	19	(Previous Unit 36) 2	-	-	-	-	-	-	NC	NC	-	-	-	-	-	-	-	-	+	+	NC	NC	NC	NC
36C	Meyers (El Dorado County)	14	(Previous Unit 36) 2	NC	NC	-	-	NC	NC	NC	NC	NC	NC	NC	NC	-	-	-	-	+	+	NC	NC	NC	NC
37	Echo Summit (El Dorado County)	26	3	-	-	-	-	-	-	NC	NC	-	-	-	-	-	-	-	-	+	+	NC	NC	NC	NC
38	Upper Truckee River (El Dorado County)	18	2	-	-	-	-	-	-	NC	NC	-	-	-	-	-	-	-	-	+	+	NC	NC	NC	NC
39	Alpine Summit (El Dorado County)	24	3+	-	-	-	-	-	-	NC	NC	-	-	-	-	-	-	-	-	+	+	NC	NC	NC	NC

Notes:

\+ = Positive visual impact
\- = Negative visual impact
NC = No change

[a] TRPA 2002 Threshold Evaluation Report range: 5 (low) to 30 (high); travel route (roadway) minimum threshold attainment score = 15.5

[b] TPRA 1982 Lake Tahoe Basin Scenic Resource Inventory range: 1 (low) to 3+ (high)

Buildings are visible from SR 89 west of the US 50/SR 89 intersection to Camp Richardson Resort and consist of one-story commercial buildings and one- and two-story residences. North of Camp Richardson is relatively undeveloped except for utilities and highway signage. Along SR 89 at Emerald Bay, there are retaining walls, parking areas, and an occasional sign. One- and two-story homes residential buildings are visible at Rubicon Bay. Meeks Bay has a few commercial services buildings near the Meeks Bay Resort and Marina. North of the resort are sparsely located one- and two-story residences until Glen Ridge Road, after which no buildings are visible until the northern project limits at Tahoma.

3.3.2 Regulatory Setting

3.3.2.1 Federal

National Scenic Byways Program

The National Scenic Byways Program is operated by the FHWA to recognize certain roads as All-American Roads or National Scenic Byways based on one or more archeological, cultural, historic, natural, recreational, or scenic quality. US 50 in El Dorado County and SR 89 at the Monitor Pass and Luther Pass Highways and Lake Tahoe Road have been designated as National Scenic Byways.

National Trails System

The National Trails System Act, which is under the jurisdiction of the National Park Service, defines National Scenic Trails "as extended trails so located as to provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which such trails may pass." The Pacific Crest National Scenic Trail, extending north-south along the crests of the Sierra Nevada mountains, crosses US 50 west of SR 89 in the Echo Lake region, outside of the project limits.

National Natural Landmarks Program

The National Natural Landmarks Program, also under the jurisdiction of the National Park Service, recognizes and encourages the conservation of outstanding examples of the country's natural history. The program identifies and recognizes the best examples of biological and geological features in both public and private ownership. Emerald Bay was designated as a National Natural Landmark in 1968 as an outstanding example of glacial geology.

3.3.2.2 State

CEQA Significance Criteria

Potentially applicable CEQA significance criteria for the Program include the following.

- Have a substantial adverse effect on a scenic vista.
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings and structures such as rockwalls within a state scenic highway.

- Substantially degrade the existing visual character or quality of the site and its surroundings.
- Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area.

State Scenic Highway Program

The State Scenic Highway Program, created by the California Legislature in 1963, was established to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to highways. A highway is officially designated under this program when a local jurisdiction adopts a scenic corridor protection program, applies to Caltrans for scenic highway approval, and receives notification from Caltrans that the highway has been designated as a Scenic Highway. US 50 between Echo Summit and the South Lake Tahoe city limit and SR 89 between Alpine and Placer Counties are designated as State Scenic Highways.

3.3.2.3 Regional

TRPA Thresholds

One of the primary objectives embodied in the TRPA Compact is the preservation of the scenic values of the Lake Tahoe Basin, which are closely linked to the social and economic health of the region (TRPA Compact, Public Law 96-551-Dec. 19, 1980, Article I). The TRPA has inventoried and rated roadway segments and travel routes in the region, including segments within the Study Area, to determine scenic resource values from roadway vantage points. Based on the TRPA's 1982 inventory of resources in the Tahoe Basin, it established threshold standards for the protection and enhancement of the scenic quality, and evaluates performance in achieving those levels on a regional basis (TRPA 2002). The TRPA requires that the numerical threshold assigned to each rated roadway segment or travel route be maintained or improved.

The following TRPA thresholds currently apply to visual resources:

- SR-1 – Travel Route Rating: The travel route rating threshold tracks long-term, cumulative changes to views seen from major roadways in urban and natural landscapes in the region and the views seen from Lake Tahoe looking toward the shore. To secure threshold attainment, all travel routes with a 1982 rating of 15.5 (for roadway units) or 7.5 (for shoreline units) or greater must maintain their scores, and all travel routes with a 1982 score of 15 (roadway) or 7 (shoreline) or less must improve their scores until he score is reached.
- SR-2 – Scenic Quality Rating: The scenic quality rating threshold protects specific views of scenic features of Tahoe's natural landscape that can be seen from major roadways and from the lake. To secure threshold attainment, all 1982 scenic quality scores must be maintained.
- SR-3 – Public Recreation Areas and Bike Trails: The public recreation area threshold protects the viewshed from public recreation areas and certain bicycle trails. To secure threshold attainment, all 1993 scenic quality scores must be maintained.
- SR-4 – Community Design: To secure threshold attainment, design standards and guidelines must be widely implemented to improve travel route ratings and produce built environments compatible with the natural, scenic, and recreational values of the region.

TRPA Tree Removal Ordinances

Cutting, moving, removing, killing, or materially damaging live trees; removing disease-infested and hazardous trees; and attaching appurtenances to trees (6 inches diameter at breast height and larger) require approval of a permit by the TRPA. Trees of "limited occurrence" (such as aspen, black cottonwood, ponderosa pine, Douglas fir, incense cedar, sugar pine, western white pine, mountain hemlock, whitebark pine, and western juniper) should be managed for protection and enhancement, and promotion of late stage or old growth characteristics (TRPA Code of Ordinances, Chapter 71). Replacement ratios and planting requirements are generally determined by TRPA on a case-by-case basis.

El Dorado County General Plan

The Transportation and Circulation Element of the General Plan (El Dorado County 2004), Policy TC-1w states that new streets and improvements to existing rural roads necessitated by new development shall be designed to minimize visual impacts, preserve rural character, and ensure neighborhood quality to the maximum extent possible consistent with the needs of emergency access, on-street parking, and vehicular and pedestrian safety.

South Lake Tahoe General Plan

The South Lake Tahoe General Plan (City of South Lake Tahoe 2003) includes measures to conserve and enhance the scenic and other natural resources within the city boundaries. These include goals to implement and construct storm drainage and erosion control projects that complement and improve the transportation system. Conservation Element goals include conserving and enhancing the scenic and other natural resources within the city boundaries and managing open space to promote conservation of vegetation and protection of watersheds.

Meyers Community Plan (TRPA 1998)

The community plan identifies several environmental improvement goals that can relate to visual resources and the Program, including the following.

- The installation and maintenance of water quality BMPs on public and private lands
- The implementation of site planning improvements consistent with the TRPA's Scenic Quality Improvement Program and Community Design Program
- The preservation of existing views from Meyers to the surrounding landscape
- The recognition of US 50 and SR 89 as state and regionally designated scenic highway corridors and the maintenance and improvement the quality of their viewsheds

3.3.3 Impacts

This section evaluates the potential visual impacts of the proposed Program.

Impact Assessment Methodology

As discussed in Section 3.3.1, the viewshed for the proposed Program was identified from an on-the-ground reconnaissance of the areas adjacent to US 50 and SR 89 that are potential sites for Program improvements. Existing infiltration basins in the Tahoe Basin were used as reference points for determining the distances from which infiltration basins could potentially be seen from the US 50 and SR 89 corridors. The methodology used to evaluate visual impacts is based on *Visual Impact Assessment for Highway Projects* guidelines (FHWA 1983).

3.3.3.1 CEQA Considerations

During construction, viewers would see materials, equipment, workers, and the operations of construction, including trenches, excavations, and structures in the process of being built. Motorists and pedestrians would be exposed to construction activities while passing through the construction zones. Residents of adjacent homes and business owners and employees would be exposed to construction activities on a more continuous basis while work is under way in nearby project segments. Construction impacts to the visual environment would be unavoidable and short term. Because the impacts would be temporary and seasonal and would transition along the roadway segments as work is completed, they are considered less than significant.

The Program could impact the visual character and quality of the existing visual environment of views to Emerald Bay from SR 89 and from Emerald Bay toward the proposed facility locations adjacent to SR 89. These impacts could occur where new retaining walls and concrete structures are installed and would involve substantial removal of vegetation and addition of imported rock for slope stabilization and erosion control. Emerald Bay is a National Natural Landmark, and US 50 between Echo Summit and South Lake Tahoe and SR 89 between Placer and Alpine Counties are designated State Scenic Highways. Along these routes and depending on the visibility of the work, the steepness of the slopes and inadequate horizontal flat terrain may make it difficult or impossible to hide or blend such structures completely into the surrounding visual landscape. Some of these effects could be only temporary until vegetation matures or the slopes become weathered and blend in with the existing environment. The Program facilities could result in significant effects to scenic vistas, scenic resources, and the visual character of the Emerald Bay area. Mitigation is proposed in Section 3.3.4.

Many hiking trails have trail heads located on US 50 and SR 89. A facility that contrasts with the natural and undisturbed landscape and is visible from the trails would be considered an adverse visual impact. However, if mitigated as discussed in Section 3.3.4, this impact would be reduced to less than significant.

In general, any facility that visually contrasts with naturally occurring and undisturbed landscapes or replaces existing trees or other vegetation may result in an impact to the visual environment. The specific types of facilities that could result in impacts are summarized as follows.

- Infiltration basins, which would appear as sculpted land forms with steep side slopes and regularly shaped channels.
- Traction sand traps, which capture suspended sands in drainage runoff and minimize the amount of eroded material carried downstream.
- Retaining walls.

- Rock blankets and slope covers, if they have replaced existing surfaces that support vegetation and where they appear as islands of rock surrounded by vegetation.
- Shoulder widening, if trees are removed that screen unsightly views and provide a sense of enclosure along a wooded segment of highway. Removal of trees would result in positive visual impacts if vistas of distant scenic resources were opened to view.
- Blasting rock escarpments and excavation to widen the road and shoulders, if exposed substrata have different colors and surface textures than surrounding undisturbed rock that has been weathered and eroded over time. Excavated surfaces may be visible from long distances and could potentially be seen from views from the lake or opposite hillsides/shorelines, such as at Emerald Bay.
- Flattening and protecting erodible slopes for erosion control, if the new slopes appear machine tooled and contrast with natural adjacent slopes.

These impacts could be avoided by use of the mitigation measures discussed in Section 3.3.4. Therefore, visual impacts from Program facilities would be less than significant.

3.3.3.2 TRPA Considerations

Program-related impacts on the quality of the visual environment are identified in Table 3.3-1 by TRPA Roadway Unit (shown in Figure 3.3-1) and discussed below. Visual impacts are shown as a plus, a minus, or NC (no change), meaning that the proposed Program would have a positive impact, a negative impact, or little to no impact, respectively, on the TRPA Composite Roadway Threshold Numbers and Visual Resource Ratings. The Threshold Numbers and Visual Resource Ratings indicate the visual quality within a Roadway Unit. The TRPA has designated a Threshold Score of 15.5 as the minimum acceptable level for visual quality. Some areas, especially where development has occurred, are below that rating. In those areas, the goal is to improve conditions in the visual environment to increase their score to 15.5 or better through the implementation of mitigation measures described in Section 3.3.4. In addition, the Program would not reduce a TRPA designated Travel Route or Shoreline Rating.

The following provides a more detailed description of the proposed Program facilities identified in Table 3.3-1 and their anticipated impacts to TRPA visual ratings.

Widen Shoulders

Where shoulders are proposed to be widened, the dimension would vary from 1.2 to 2.4 meters (3.94 to 7.87 feet). In mountainous terrain, widening would require extensive disturbance of existing land forms and vegetation due to earthwork, blasting of slopes, construction of retaining walls, roadway stabilization fill and slopes, and slope stabilization using light rock and/or vegetation. In areas where the terrain is relatively flat, shoulder widening would remove existing materials and replace them with asphalt paving and dikes at the edges of the road to direct water flow. Wherever vertical undisturbed indigenous surfaces such as rock escarpments, large boulders, and mixed rock/earth/vegetation are disturbed, adverse visual impacts are expected to occur. The public would see disturbed surfaces on uphill slopes at the edges of the roadway while driving, across chasms where the roadway winds around topography, from hiking trails, from within 300 feet of the shore of Lake Tahoe, and from stationary view points. The same

would be true for views of disturbed downhill slopes, except that motorists would not see downhill slopes in near views.

Construct Retaining Walls to Facilitate Shoulder Widening

Construction of retaining walls on uphill slopes and downhill slopes would result in similar visual impacts to those described for shoulder widening. In addition, retaining walls would be human-made, poured-in-place concrete, and uniform in line, and would have a standardized range of colors and textures that would contrast with the naturally occurring and undisturbed surfaces that would be seen adjacent to the walls. Walls can be finished in faux rock textures and colors to help blend them into natural environments. However, they would still contrast with the natural lines, forms, colors, and textures. The impact to the visual character of the environment as a result of construction of retaining walls is expected to be adverse. Such a visual impact would be considered particularly adverse in areas that have high TRPA ratings for scenic quality.

Pave Existing Unsurfaced Pullouts

Existing unsurfaced pullouts are compacted earth or compacted gravel on earth. The surface texture is random and variable, the color is gray-brown, the form is the horizontal plane and the line is the outline of the pullout. Paving the pullouts with asphalt or concrete would change the visual character of the pullouts to a uniform smooth texture and color. The change to the character of the visual environment from paving pullouts is expected to be marginally adverse. However, proposals to restore unsurfaced pullouts to offset land coverage impacts are included in the design, unless paving is required for parking, maintenance access, or stormwater conveyance.

Rehabilitate Existing and Install New Drainage Systems

Visual impacts would be expected to occur where drainage system improvements would be seen by the public. Where new structures would replace existing structures in the same location, little to no visual impacts would be expected. Where new drainage structures are proposed in undisturbed locations, visual impacts would occur from removal of natural lines, forms, colors, and textures with structures that are uniform in line, color, form and texture and with lightly-colored reflective surfaces. Where seen by the public, these structures would be perceived as adverse visual impacts. In areas where the natural environment has a high TRPA visual quality rating, the visual impact could be perceived as particularly adverse.

Install Traction Sand Traps

Traction sand traps reduce water velocity and filter stormwater runoff through sand, catching larger debris particles that then filter down to the bottom of the sand trap. The design of the sand trap depends on the amount of water that is being filtered, cost factors, and available space. The top of the trap may remain similar in dimensions at approximately 0.9 by 1.2 meter (3 by 4 feet) or greater while the depth would vary depending on the volume of water being treated. Where concrete boxes are considered for use to contain the sand, they would contrast with the surrounding visual environment in natural undisturbed areas and would be perceived as an adverse visual impact. In urban areas such as Stateline and South Lake Tahoe, the sand traps in

concrete boxes, if placed adjacent to existing paved areas, would not be perceived as an adverse visual impact because similar features are already seen in these locations.

Construct Infiltration Basins

Trees would be removed to construct infiltration basins. Tree removal might create an adverse visual impact in areas where the trees screened structures and might be considered a positive visual impact where trees blocked views of scenic resources. Basins that contrast adversely with the random and variable colors, textures, forms, and lines seen in the adjacent undisturbed natural environment would be perceived as a particularly adverse visual impact wherever the structures are visible to the public.

Provide Rock Slope Protection

Wherever rock slope protection is placed in a natural undisturbed environment, adverse visual impacts are expected to occur. The rocks are uniform within a range of sizes and the color is light gray. They would replace the random and variable lines, forms, colors, and textures in the existing undisturbed environment, and would contrast with the adjacent natural environment.

Flatten and Protect Erodible Slopes for Erosion Control

Earthwork removes the random and variable characteristics of the natural environment, including landforms, rocks and boulders, trees, and other vegetation. The design of the new slope would determine the degree of adversity of permanent visual impacts.

Revegetate Bare or Erodible Areas

Revegetating of bare or erodible areas would be perceived as a positive visual impact as long as the species used in the replacement matched species seen in the adjacent undisturbed environment under similar microclimate and terrain conditions. Use of dissimilar species would be perceived as an adverse visual impact because the character between new species and naturally occurring species in the adjacent visual environment would contrast. Revegetation will include species from TRPA's Recommended Plant List to minimize potential impacts from non-native species.

Allow Sheet Flow and Spreading of Runoff Water

There would be no visual impacts expected from shaping roadway surfaces to sheet flow. Existing roadway surfaces are already visible, and reshaping them would not change the character of the visual environment adversely. Secondary and adverse visual impacts would be expected to occur wherever runoff might result in erosion of the undisturbed natural environment.

Pave All Driveway Connections Within State Right-of-Way

The changes to the existing character of the visual environment and potential visual impacts as a result of such paving would be similar to paving pullout areas described above.

Tree Removal

Many of the preliminary locations for drainage basins contain trees. Substantial adverse visual impacts could result where groups of trees are removed that are visible to residents, where the trees occur within state park lands, or when the trees provide a separation between the highway and an existing land use or facility (such as a trail). Removal of trees will require approval of TRPA.

3.3.3.3 No Project Alternative

The No Project Alternative would have no effect on the existing visual character of the site within the project limits. No construction activities would occur that would disrupt the existing visual character of the site, and the existing visual/aesthetic conditions within the project limits would be preserved.

3.3.4 Avoidance, Minimization, and Mitigation

Drainage, infiltration, and filtration structures could be mitigated in the Emerald Bay viewing zones if they were installed underneath the highway road bed or pullouts, with access panels located within the paved roadway surfaces. Some existing retaining walls have been installed in adjacent areas using a faux rock treatment and appear unnatural, introduced, and in contrast with the surrounding visual environment. The existing highway and associated road cuts and structures are visible to motorists in short- and long-range views. New retaining walls should be constructed to appear consistent with the existing naturally occurring rocky slopes using native materials (rock and boulders) to match the rocky slopes that are seen in the area. Rock retaining walls should be varied in height and horizontal alignment to appear less uniform and avoid potentially significant visual impacts in this viewing zone.

Rock coloration could be used to help blend rock slope and retaining walls into their surrounding environments. Rock coloration involves applying a penetrating oxide coloration material to exposed boulder placements and rock slope protection surfaces to produce a brownish, earthtone color. This will blend the boulder placements and rock slope protection surfaces with the colors in the surrounding environment. The oxidation materials include an aqueous solution that contains salts of iron and manganese with built-in oxidizers and other trace elements including copper and zinc.

The appearance of drainage structures could also be mitigated by moving the large concrete surfaces into the road bed shoulder, depressing the concrete surface to below the asphalt layer and surfacing the top with asphalt. Manholes with steel covers would be seen at the surface of the asphalt. Another mitigation measure for concrete drainage structures would be to locate them further down the hill, away from public view, color the concrete an earth color and install boulders around the concrete box to hide the box and blend it into the undisturbed natural landscape.

To minimize or avoid potential impacts from infiltration basins, proposed earthen drainage basins should be created using freeform shapes in and around tree areas. Areas of the basins not subject to maintenance (such as side slopes above the low areas prone to siltation) could be planted with riparian trees or vegetation compatible with temporary standing water. The basins could also be softened by planting grasses and shrubs indigenous to the surrounding landscape.

Any trees planted must not block existing views of scenic resources. Rock placed in the basins to minimize erosion should avoid contrasting with the existing material and should blend well with the undisturbed natural landscape. As appropriate to the each basin, rock should be used that has a wide range of sizes and earthen or weathered colors that match rocks in immediately adjacent areas.

Mitigation measures for traction sand traps would be similar to those for infiltration basins that include concrete structures.

Retaining walls could be mitigated by using construction methods that emphasize large boulders rather than concrete and using a wide diversity of sizes and shapes as might be found in an undisturbed natural landscape. The colors should match the colors of adjacent and indigenous rocks. Another mitigation measure would be to construct concrete retaining walls on a laid-back batter in irregular tiers, steps, and offset planes to provide a supporting structure upon which to install large boulders on the "treads" and in the crevices and build up a boulder surface that would appear irregular and naturally occurring. The batter and treads would need to be angled to support boulders by means of gravity.

An alternative method of erosion control to rock blankets and slope covers could include using rock, e.g., geofabric overlain with boulders and soil and planted with indigenous species of vegetation. Where no other method of erosion mitigation is feasible, planting holes should be placed frequently throughout the rock area for indigenous species of spreading shrubs and trees to help blend the rock blankets into the surrounding undisturbed natural vegetated landscape. Vegetation restoration should include spreading shrubs and trees so that the shrubs can cover quickly and mitigate the adverse visual impact of the rock blankets.

Visual impacts from tree removal could be mitigated by planting new trees to screen unsightly views, although a delay in coverage could exist until growth returns to an effective height. Faster-growing species could be mixed with pines and then removed or thinned as the pines mature. Any disturbance to vegetation in areas adjacent to the shoulder widening would need to be restored to the original character using the same species.

Areas disturbed by construction are recommended for restoration to the original character and quality using the same colors, types, and plant species of inorganic and organic materials that existed prior to the start of the construction.

General Design Recommendations

The following recommendations are intended to provide guidance to the design team in order to minimize adverse impacts to scenic quality and meet TRPA scenic threshold requirements.

- All disturbed areas shall use temporary erosion control measures during construction to minimize permanent impacts to scenic quality.
- All areas disturbed during construction shall receive permanent erosion control measures. All finished slopes and contour graded areas shall be hydroseeded with a permanent seed mix composed of native plant species indigenous to the area. In addition, a revegetation project will install containerized native plants to supplement seeding.
- All small trees, tree limbs, shrubs and other woody debris generated during clearing and grubbing operations shall be chipped and stockpiled for future use as erosion control cover.

Pine needles collected from the Tahoe Basin shall be acquired and mixed with chipped material to be used as a final treatment over all disturbed soil areas.

- During clearing and grubbing operations, remove and stockpile existing topsoils (duff) as part of the earthwork. Replace topsoil in areas where revegetation work is to be implemented. Incorporate topsoil and supplemental compost (as necessary) into finished disturbed soil areas to facilitate revegetation.
- Where rock slope protection is required, use indigenous materials matching local colors and textures. All rock generated during earthwork operations over 150 mm in size shall be stockpiled and used in drainage facilities and other areas where rock slope protection is to be used. Treat newly harvested material with environmentally benign chemical stains that give rock a weathered appearance.
- Avoid removal of vegetation in areas where narrow vegetative buffer strips separate adjacent residential and commercial properties from road edge.
- Avoid removing trees and other vegetation when relocating bike trail.
- Minimize the introduction of new roadway signage. If new signage is introduced, posts shall be of wood construction and backs of signage should be painted a TRPA-approved color.
- Finished slopes shall reflect sensitivity to the natural topography and vegetation of the surrounding area. Newly constructed rock slope protection areas shall be constructed in such a way as to incorporate existing vegetation at top of slope without removal. In areas where space allows, pockets of native soil that supports vegetation shall be incorporated into rock slope protection. These areas shall be planted with native vegetation.
- Water quality improvement basins shall avoid the use of concrete or asphalt materials. Water quality improvement ditches shall be rock lined whenever possible. Avoid constructing features with harsh angles and steep slopes. Integrate features into surroundings through the use of curvilinear forms and contour grading. Use native boulders and logs removed during clearing and grubbing operations as landscape elements to integrate basins into surroundings. Basin side slopes should be designed with 1:3 to 1:4 slopes or flatter to promote successful revegetation. In locations where large basins are proposed, consider breaking basins into smaller basins units that fit into existing clearings of forest canopy.
- Locate basins in areas that are currently disturbed or denuded of vegetation. Enlarge existing basins wherever possible.
- All new drainage facilities that are visible from roadway vantage points (i.e., metal culverts and flared end sections) shall be painted to blend into existing landscape.
- Water quality improvement basins shall be sited to minimize the motorist's visual exposure from elevated roadway vantage points. Basins shall be sited and designed to avoid removing existing vegetation which screens basins from motorists view.
- Any water treatment facilities that use spreading water such as check dams shall be constructed of native materials (rock, soil and vegetation) and be low in profile.
- In locations with narrow right-of-way limits or usable roadside areas, maximize the use of linear treatment facilities such as bioswales with check dams.

- Planting areas around basins adjacent to roadway in urban settings and residences should be landscaped and irrigated to improve appearance.
- Revegetate denuded areas (soft cover) adjacent to roadway and bike trial. Install barriers in the form of mounding and ditches to deter off-shoulder parking and promote vegetation establishment.
- New signal poles, signage poles, utility cabinets and other new traffic related features shall be constructed of wood or painted a TRPA-approved color to minimize visual impacts.
- All retaining walls shall be faced with architectural treatment textures (including painting and staining) to integrate structures into surrounding natural or urban setting. Architectural treatment types will be determined during the PS&E phase.
- All concrete structures (i.e., spillways, abutments, etc.) shall be stained to blend concrete into surrounding geological features.

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This section presents the results of a delineation of wetlands and other waters of the United States that occur in the study area of the proposed Program. Potential impacts resulting from elements of the proposed Program are discussed along with mitigation measures. Stream environment zones are discussed in Section 3.5.

3.4.1 Environmental Setting

The study area for the delineation of wetlands and other waters of the U.S. consists of a relatively wide corridor that extends beyond the existing state right-of-way on both sides of US 50 and SR 89. Detailed maps of the study area are included in the *Wetland Delineation Report* for the Program (URS 2007a; also see Appendix A). The boundaries of the study area were defined broadly to provide an inventory of wetland resources along the two highways that could be used to define potential impacts at a broad scale and provide the basis for identifying specific impacts in the future as individual segments or projects are defined.

Wetland areas are defined by the presence of hydric soils, hydrophytic vegetation, and wetland hydrology. A hydric is a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part. Hydrophytic vegetation is a plant species that grows in permanently or periodically saturated soil. Under normal circumstances, a minimum of one positive wetland indicator from each parameter (vegetation, soil, and hydrology) must be found in order to make a positive wetland determination. When an area contains all three parameters, it is considered a jurisdictional wetland under Section 404 of the Clean Water Act. The following sections describe some of the general characteristics of the study area in terms of the wetland criteria.

3.4.1.1 Soils

US 50 and SR 89 traverse many soil associations within the project segments. The soil units (types) have been defined and mapped by the U.S. Department of Agriculture (USDA) Soil Conservation Service (now the Natural Resources Conservation Service [NRCS]) and Forest Service and are presented in the *Soil Survey of the Tahoe Basin Area, California and Nevada* (USDA 1974). Several of the soil series within the study area are listed as hydric soils in the NRCS's *Hydric Soils of California* (NRCS 1995).

Several hydric soils were identified within the study area including beaches; Elmira loamy coarse sand, wet variant; and marsh. These soils occur at or within the vicinity of the project limits at the Lake Tahoe shoreline east and west of Camp Richardson, and at Grass Lake on SR 89 near Luther Pass. Many soil series contain other soils mapped within their designations (inclusions) that contain a hydric soil component, and they occur at various locations along each of the project segments. The soils with hydric inclusions within the study area include Celio gravelly loamy coarse sand, Elmira gravelly loamy coarse sand, Elmira stony loamy coarse sand, Elmira-Gefo loamy coarse sands, Gefo gravelly loamy coarse sand, gravelly alluvial land, loamy alluvial land, Meeks very stony loamy coarse sand (5 to 15 percent slopes), Meeks very stony loamy coarse sand (30 to 60 percent slopes), and Meeks extremely stony loamy coarse sand (30 to 60 percent slopes).

See the *Wetland Delineation Report* (URS 2007a) for a more detailed description of the soil units in the project area.

3.4.1.2 Hydrology

Surface water bodies along or near US 50 and SR 89 include creeks, lakes, meadow marshes, and wetlands at which water is present seasonally or year-round. Within areas of steep slopes, defined or concise drainages typically pass under the highways in culverts or small bridges, or water may be collected and flow along the right-of-way before discharging to a culvert. Larger wetlands are present in areas of flat terrain such as at South Lake Tahoe, Camp Richardson, and Grass Lake. The climate in the Lake Tahoe Basin typically yields a significant snow accumulation during the winter and early spring, which provides a strong seasonal pattern of runoff to the drainages and ultimately to Lake Tahoe. Although summer and fall seasons can have convective storms that produce rainfall and runoff, the spring snowmelt typically dominates the inflow to the basin. See Section 3.2 for a more detailed discussion of hydrology of the study area.

3.4.1.3 Vegetation

Five wetland habitat types were identified in the study area based on their vegetation mix: aspen, lodgepole pine, montane riparian, perennial grassland, and wet meadow. Wetlands identified in the project area were classified as pure stands of one of these wetland types, a small portion were categorized as a mix of the habitat types, and any wetlands that did not fit these categories were identified in the broader characterization of either herbaceous or forested wetlands. See the *Wetland Delineation Report* (URS 2007a) for a more detailed description of the habitat types in the project area.

3.4.1.4 Study Methodology

Potential jurisdictional wetlands and waters of the United States in the study area were delineated in Fall 2005 and Fall 2006 using the routine on-site method described in the USACE *Wetlands Delineation Manual* (Environmental Laboratory 1987). The *National List of Plant Species that Occur in Wetlands* (Reed 1998) was used to determine the wetland indicator status of plants identified in the study area. Soil data provided in the *Soil Survey of the Tahoe Basin Area, California and Nevada* (USDA 1974) were compared to soil observations made in the field. The methods require an assessment of the presence of hydric soils, hydrophytic vegetation, and wetland hydrology. Other waters of the United States, consisting of nonwetland drainages and water bodies, were also identified.

3.4.1.5 Field Investigation Results

Jurisdictional Wetlands

A total of 19.683 hectares (ha) (48.65 acres) of potential jurisdictional wetlands were identified within the study area. Five wetland habitat types were identified, including aspen, lodgepole pine, montane riparian, perennial grassland, and wet meadow (Mayer and Laudenslayer 1988). All potential jurisdictional wetlands were assigned a habitat type in the field. Some wetlands were designated as two habitat types if they were located at the ecotone between two habitat types. The remaining identified wetland areas were categorized as either herbaceous or forested wetlands.

Other Waters of the United States

Other waters of the U.S. were characterized as one of the following types according to their origin and amount of water present: ephemeral/man-made drainage, ephemeral (natural) waterway, or perennial/intermittent waterway.

A total of 213 other waters of the U.S. (4.185 ha [10.56 acres]) were found within the study area. There were 31 ephemeral or man-made drainages (0.367 ha [0.71 acres]), 72 ephemeral waterways (0.753 ha [1.98 acres]), and 110 perennial/intermittent waterways (3.065 ha [7.87 acres]). Many of these waters of the U.S. crossed US 50 and SR 89, so the total number of polygons of waters of the U.S. is much larger.

3.4.2 Regulatory Setting

3.4.2.1 Federal

Wetlands and other water resources, such as rivers, streams, and natural basins, are a subset of "waters of the United States" and receive protection under Section 404 of the CWA. The USACE has primary federal responsibility for administering regulations that concern waters and wetlands. In this regard, the USACE acts under two statutory authorities, the Rivers and Harbors Act (Sections 9 and 10), which governs specified activities in "navigable waters," and the CWA (Section 404), which governs specified activities in "waters of the United States," including wetlands. The USACE and the U.S. Environmental Protection Agency (USEPA) define wetlands as "areas that are saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for the life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." "Waters of the United States" as defined in Code of Federal Regulations (33 CFR 328.3[a]; 40 CFR 230.3[s]) include:

(1) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(2) All interstate waters including interstate wetlands;

(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural basins, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters which are or could be used by interstate or foreign travelers for recreational or other purposes; or from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or which are used or could be used for industrial purposes by industries in interstate commerce;

(4) All impoundments of waters otherwise defined as waters of the United States under the definition;

(5) Tributaries of waters identified in paragraphs (1) through (4);

(6) Territorial seas; and

(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (1) through (6).

The term "other waters of the United States" is used to characterize water bodies such as intermittent streams that do not meet the full criteria for wetlands designation.

3.4.2.2 State

California Department of Fish and Game Section 1602

Areas within the jurisdiction of California Fish and Game Code Sections 1600–1616 include all perennial, intermittent, and ephemeral rivers, streams, and lakes in the state, including their beds and banks. Several streams were observed within the study area, and consultation with state resource agencies would be necessary in accordance with legal requirements set forth under Sections 1600–1616. A Section 1602 Lake and Streambed Alteration Agreement would be required for all work conducted within the jurisdiction.

CEQA Significance Criteria

The following is a potentially applicable CEQA significance criterion for the Program.

- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

3.4.2.3 Regional

The TRPA encourages wetland restoration. A total of 155.05 acres of SEZs were restored from 1996 to 2000 within the Lake Tahoe Basin. TRPA Code of Ordinances provisions can allow public works projects to occur in wetlands, but complete and additional mitigation is required.

TRPA Thresholds

Although no specific TRPA thresholds exist for wetlands, the TRPA Code of Ordinances protects wetland resources in the region. The following Threshold for Vegetation is applicable:

- V-1 – Common vegetation: Increase plant and structural diversity of forest communities through appropriate management practices as measured by diversity indices of species richness, relative abundance and pattern.

This threshold includes a nondegradation standard for native deciduous trees, wetlands, and meadows. It also calls for the preservation of the richness and abundance of wetland and riparian-associated species. Similarly, uncommon plant species are protected by Vegetation Thresholds.

3.4.3 Impacts

3.4.3.1 CEQA Considerations

Impacts by basin and jurisdictional area are detailed in the *Wetland Delineation Report* (URS 2007a). The following sections discuss potential permanent and direct impacts by resource type, assuming construction of the full area of all proposed basins. Table 3.4-1 summarizes the area of Jurisdictional waters of the U.S., including wetlands, and potential impacts.

As discussed previously, the USACE has jurisdiction over wetlands and other waters of the U.S. and the CDFG has jurisdiction over lakes, streams, and rivers in the state, including their beds and banks.

Table 3.4-1
Wetlands and Other Waters of the U.S. in the Study Area and Potential Impacts (hectares [acres])

		Wetlands	Other Waters of the U.S.
Resources in the Study Area		19.683 (48.65)	4.185 (10.56)
Impacts	Build Proposed Basins	2.424 (5.98)	0.236 (0.58)
	Upgrade Existing Basins	1.503 (3.71)	0.014 (0.04)
	Pave Pullout Areas	0.019 (0.07)	0.009 (0.06)
	Total Impacts	**4.044 (9.75)**	**0.259 (0.68)**

Jurisdictional Wetland Impacts

This section summarizes impacts to jurisdictional wetlands due to proposed construction of infiltration and sediment detention basins, retrofitting of existing basins, and paving of pullout areas on the sides of US 50 and SR 89 and other activities.

Impacts Due to Proposed and Existing Basins

A total of 2.424 ha (5.98 acres) of jurisdictional wetlands would be impacted by construction of the full area of 18 of the proposed basins in the study area. Retrofitting and/or enlarging of seven existing basins would impact a total of 1.503 ha (3.71 acres) of jurisdictional wetlands.

Impacts Due to Proposed Paving of Pullout Areas

A total of four potential jurisdictional wetlands would be impacted by construction of the proposed pullouts. The total area impacted would amount to approximately 0.019 ha (0.07 acre).

Impacts Due to Other Activities

Direct and indirect impacts to potential jurisdictional waters of the United States could occur from other construction activities, as shown in Table 3.4-2. Direct impacts would include the construction of culvert extensions along small portions of these waters, which would convert natural stream habitats to artificial stream habitats. However, direct and permanent impacts to waters during culvert upgrading/replacement will be minimal. Indirect impacts to waters of the United States during these construction activities may include siltation. More detail on direct, indirect, permanent, and temporary impacts will become available as project details are developed for each segment.

Table 3.4-2
Potential Impacts to Wetlands from Construction Activities

Construction Activity	Potential for Impact If Within/Near Wetland			
	Direct	Indirect	Permanent	Temporary
Widen shoulders to 1.2 meters minimum with asphalt-concrete (AC) dike to convey storm runoff	X	X	X	X
Construct retaining walls where required to facilitate shoulder widening	X		X	X
Rehabilitate existing and install new drainage systems	X	X	X	X
Install traction sand traps	X	X	X	X
Provide rock slope protection	X		X	X
Flatten and protect erodible slopes for erosion control	X	X		X
Revegetate bare or erodible areas				X
Allow sheet flow off roadway where longitudinal basins are proposed, and spreading of runoff water where feasible in SEZ areas		X		
Pave all driveway connections within state right-of-way				X

Impacts to Other Waters of the United States

Impacts Due to Proposed and Existing Basins

Culvert replacement and upgrades would permanently impact waters. Any waters that traverse shoulders proposed for widening would be impacted permanently, unless these areas are avoided. Although no areas have been specified for shoulder widening, losses to waters of the United States could be relatively high if shoulder widening is implemented throughout the study area. Temporary impacts to waters of the United States include loss of water to a portion of the stream used by aquatic species, obstruction of fish passage, and decreased water quality (higher-than-normal concentration of suspended particles in the water column) during construction activities within or adjacent to waters, as well as an increase in the potential for weed growth due to soil disturbance. Other proposed construction activities will cause both direct/indirect and permanent/temporary impacts if they are located within or in close proximity of existing waters of the United States. However, most waters of the United States can be avoided when planning other proposed construction activities.

A total of 0.236 ha (0.58 acres) of jurisdictional other waters of the U.S. would be impacted by construction of the full area of 29 of the 165 total proposed basins. Proposed basins would impact 35 other waters of the U.S., including 15 perennial waters, 17 ephemeral waters, and three man-made drainages. A total of 0.014 ha (<0.04 acres) of jurisdictional other waters of the U.S. were found within four existing basins. Proposed retrofitting and/or enlarging of these existing basins might impact some of these jurisdictional waters; however, the exact area of

impact is unknown at this time, because the exact location of modifications to these basins has not been determined.

Impacts Due to Proposed Paving of Pullout Areas

A total of six potential other waters of the U.S. would be impacted by paving of the proposed six pullouts. The total area impacted would amount to approximately <0.009 ha (<0.06 acre).

Impacts Due to Other Activities

Impacts to potential jurisdictional waters of the U.S. in the study area could occur from other Program activities. Table 3.4-3 indicates the type of impacts that could occur. More detail on direct, indirect, permanent, and temporary impacts will become available as project details are developed for each segment.

Table 3.4-3
Potential Impacts to Other Waters of the United States from Construction Activities

Construction Activity	Impact			
	Direct	Indirect	Permanent	Temporary
Widen shoulders to 1.2 meters minimum with asphalt-concrete (AC) dike to convey storm runoff	X	X	X	X
Construct retaining walls where required to facilitate shoulder widening		X	X	X
Rehabilitate existing and install new drainage systems	X	X	X	X
Install traction sand traps		X	X	X
Provide rock slope protection			X	X
Flatten and protect erodible slopes for erosion control		X		X
Revegetate bare or erodible areas				X
Allow sheet flow off roadway where longitudinal basins are proposed, and spreading of runoff water where feasible in SEZ areas				
Pave all driveway connections within State right-of-way	X		X	X

3.4.3.2 TRPA Considerations

Impacts to SEZ areas due to construction activities are addressed in Section 3.5.3.2.

3.4.3.3 No Project Alternative

The No Project Alternative would consist of not implementing the EIP projects for which Caltrans is the lead agency; therefore, current contributions to lake pollution would continue.

3.4.4 Avoidance, Minimization, and Mitigation

Potential impacts could be avoided and/or minimized through modification of construction specifications and timing of Program implementation. These avoidance and minimization techniques are described below.

3.4.4.1 Avoidance Measures

The location and design of project features such as water treatment basins are preliminary, and in some cases the preliminary locations may impact existing wetland areas identified during the studies performed for this EIR. In general, direct impacts would be avoided by either removing the basin from the design of each specific segment of the Program, or redesigning the basin to avoid or minimize impacts. Additional direct and indirect impacts to sensitive biological resources (including wetlands, waters of the United States, SEZ resources, and sensitive habitats for rare plants) throughout the project area will be avoided or minimized by designating these features outside of the construction impact area as environmentally sensitive areas (ESAs) on construction plans and specifications. Information related to the locations of ESAs and their treatment will be shown on contract plans and discussed in the Special Provisions. ESA provisions should include, but are not limited to, the use of temporary high-visibility orange fencing to delineate the proposed limit of work in areas adjacent to sensitive resources, and to delineate and exclude sensitive resources from potential construction impacts. Contractor encroachment into ESAs will be restricted (including the staging/operation of heavy equipment or casting of excavation materials). ESA provisions shall be implemented as a first order of work, and remain in place until all construction activities have been completed.

3.4.4.2 General Minimization and Mitigation Measures

Construction Clean-up

All temporary fill and construction debris will be removed from the construction area after completion of construction activities.

Construction Scheduling

Construction will be timed to minimize potential impacts to sensitive biological resources as specified in the mitigation measures for water quality described in Section 3.4.4.4 and for rare plants and wildlife described in Section 3.5.4. Construction work will be minimal during the fall, winter, and spring.

3.4.4.3 Weed Control Minimization and Mitigation Measures

Weed-Free Construction Equipment

All construction equipment working in or near Stream Environment Zones (SEZ) areas must be steam cleaned of potential noxious weed sources (such as mud and vegetation) prior to mobilization at the project site (preferably before entry into the Lake Tahoe Basin) and maintained in clean and good working order with maintenance logs made available to TRPA at their request . This should also be performed after entering a potentially infested area and before

moving on to another area, to help ensure that noxious weeds are not introduced into the construction area. The contractor shall employ whatever cleaning methods are necessary to ensure that equipment is free of noxious weeds, typically spraying equipment with a high-pressure water hose. Equipment shall be considered free of soil, seeds, and other such debris when a visual inspection does not disclose such material. Disassembly of equipment components or specialized inspection tools are not required. Equipment-washing stations shall be placed in areas that afford easy containment and monitoring (preferably outside of the Lake Tahoe Basin) and that do not drain into the forest or sensitive (wetlands or other waters of the U.S.) areas.

Equipment Staging in Weed-Free Areas

Equipment should only be staged in weed-free areas. Landings should be placed in forested areas rather than open flats to help prevent the establishment of noxious invaders such as yellow star thistle, which use open, sunny areas.

Weed-Free Erosion Control Treatments

To further minimize the risk of introducing additional non-native species into the area, only locally TRPA-approved plant species will be used in any erosion control or revegetation seed mix or stock. No dry-farmed straw will be used, and certified weed-free straw shall be required where erosion control straw is to be used. In addition, any hydroseed mulch used for revegetation activities must also be certified weed-free.

3.4.4.4 Minimization and Mitigation Measures for Water Quality Impacts

Minimize Disturbance to Creek Channel and Adjacent Areas

Disruption of the streambed and adjacent riparian corridor will be minimized. All stream and riparian habitat areas outside of the construction impact areas will be designated as ESAs, as detailed in Section 3.4.4.1.

Disturbed areas within the construction limits, including temporary or permanent access routes, will be graded to minimize surface erosion and siltation into streambeds. Any access routes will be removed after each construction season, and the streambed and bank will be re-contoured back to the general angle of repose that existed preconstruction. Streambanks and adjacent areas that are disturbed by construction activities will be stabilized to avoid increased erosion during subsequent storms and runoff. Bare areas will be covered with mulch and revegetated to preconstruction conditions. Construction site BMPs will be used to prevent contamination of the streambank and watercourse from construction material and debris, as detailed in the next measure.

Containment Measures/Construction Site BMPs

Measures will be employed to prevent any construction material or debris from entering surface waters or their channels. BMPs for erosion control will be implemented and in place prior to, during, and after construction to ensure that no silt or sediment enters surface waters.

Caltrans' Standard Specifications require the Contractor to submit a Water Pollution Control Plan. This plan must meet the standards and objectives to minimize water pollution impacts set forth in Section 7-1.01G of Caltrans' Standard Specifications. The Water Pollution Control Plan

must also be in compliance with the goals and restrictions identified in the Lahontan Regional Water Quality Control Board's (Lahontan RWQCB's) Basin Plan. Any additional measures included in the RWQCB Section 401 certification, CDFG Section 1602 Agreement, CWA Section 404 permit, or TRPA permit will be complied with as required by law. Typical standards/objectives, at times referred to as BMPs, may include the following.

- Where working areas encroach on live or dry streams, lakes, or wetlands, physical barriers approved by the TRPA and Lahontan RWQCB adequate to prevent the flow or discharge of sediment into these systems shall be constructed and maintained between working areas and streams, lakes, and wetlands. During construction of the barriers, discharge of sediment into streams shall be held to a minimum. Discharge will be contained through the use of measures approved by the TRPA and Lahontan RWQCB that will keep sediment from entering protected waters.
- Oily or greasy substances originating from the Contractor's operations shall not be allowed to enter or be placed where they will later enter a live or dry stream, pond, or wetland.
- Asphalt concrete shall not be allowed to enter a live or dry stream, pond, or wetland.

Dewatering Activities

Depending on seasonal flows, dewatering of the streambed or culvert course and/or a temporary stream diversion may be necessary where culvert rehabilitation or replacement is proposed. Any intakes that may be required for water pumps associated with wetting, irrigation, or dewatering of sites shall be screened to CDFG specifications to avoid the intake of fish. If dewatering of the site is deemed necessary, a temporary sediment-settling basin will be constructed downstream of the activity. All discharge waters associated with the dewatering activities will be pumped into the constructed basin before being allowed to re-enter drainages.

Restore Riparian and Stream Habitat Disturbed by Construction

Prior to vegetation removal, the area will be surveyed by a qualified biologist for a complete accounting of species and their quantities present within the construction limits. Upon completion of construction activities, streambanks will be permanently stabilized and the riparian areas will be replanted with appropriate native species. Tree and shrub species that will be used for the riparian restoration will include species such as aspen, willow, alder, and cottonwood. Stream channels will be regraded to preconstruction conditions. In addition, all temporary disturbance areas will be hydroseeded with the appropriate mix of native herbaceous and grass species unique to the specific Lake Tahoe vegetation type disturbed.

A restoration and monitoring plan will be prepared by the Caltrans Landscape Architecture Branch and will be submitted for approval by the appropriate agencies prior to Program permitting. The restoration plan will outline and detail all planting and erosion control activities and all associated proposed monitoring activities (including length and timing of monitoring, success criteria, remedial actions, and documentation).

Water Quality Fees or Excess Coverage Mitigation

Any new land coverage in the Lake Tahoe Basin is subject to TRPA regulation and may be assessed a water quality mitigation fee (for projects using "allowable" potential coverage; $1.34

per square foot) or may be required to perform Excess Coverage Mitigation (for projects utilizing "excess" coverage). Excess land coverage is defined as existing coverage beyond the total maximum allowable base coverage, the transferred coverage, and the coverage previously mitigated under this Program. The Excess Coverage Mitigation program offers five options to mitigate excess land coverage:

- Reduce coverage on-site.
- Reduce coverage off-site.
- Coverage mitigation fee used to retire land coverage within the same hydrologic zone.
- Parcel consolidation or parcel line adjustment.
- Projects within community plans (see TRPA Code Section 20-5).

The project segments may be subject to this mitigation requirement.

Erosion Control

Temporary erosion control devices will be installed on slopes where erosion or sedimentation could degrade sensitive biological resources.

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This section describes existing conditions, potential impacts, and mitigation measures for special-status wildlife and plant species, sensitive habitats, and stream environment zones (SEZs).

3.5.1 Environmental Setting

3.5.1.1 Special-Status Wildlife Species

Sensitive wildlife species are known to occur or may occur in the vicinity of the proposed Program. At this time, the Program does not require FHWA or federal agency review; however, a USFWS list of federally designated endangered and threatened species was consulted to determine the potential presence of these species. This list was compiled for the 7.5-minute quarter quadrangles within and immediately adjacent to the study area (Markleeville, Carson Pass, Caples Lake, Tragedy Spring, Minden, South Lake Tahoe, Freel Peak, Woodfords, Emerald Bay, Rockbound Valley, Pyramid Peak, Echo Lake, Loon Lake, Kings Beach, Tahoe City, Homewood, Meeks Bay, Granite Chief, and Wentworth Springs).

A complete list of sensitive species was compiled using the following resources:

- Official USFWS Species List of Federal Endangered and Threatened Species that may be affected (December 20, 2005)
- TRPA Goals and Policies Special Interest Species
- California's Fully Protected Animals List
- California's Amphibians, Birds, Fish, Mammals, and Reptile Species of Special Concern
- State and Federally Listed Endangered and Threatened Animals of California
- California Natural Diversity Data Base (CNDDB) (October 2005)
- Wildlife2000, Forest Service Lake Tahoe Basin Management Unit (LTBMU), 2003 and 2005.

Table 3.5-1 lists all sensitive wildlife species for which suitable habitat exists in the study area or that are known to occur in the study area. These include:

- Species for which potential suitable habitat is present and that may be expected to occur in the project area
- Species for which there are known occurrences from the CNDDB or Wildlife2000 databases in the project vicinity
- Species that were observed during the wetland delineation fieldwork within the study area

Descriptions of the potential occurrence of species within the study area were compiled based on the information provided above and known occurrences provided in the form of GIS databases. The GIS database area is as follows:

- CNDDB 2005, known occurrences within 16.1 km (10 miles) of the study area

Table 3.5-1
Special-Status Wildlife Species That Potentially Occur in the Study Area

Scientific Name	Common Name	Status	Habitat	Presence/Absence of Habitat/Species in the Study Area
Amphibians				
Hydromantes platycephalus	Mount Lyell salamander	FSC, CSC	Inhabits high-elevation rock fields in mixed conifer, lodgepole pine, and sub-alpine areas, using rock fissures, seeps, shade, and low plants.	Present. Potential suitable habitat present in the study area. Know occurrence in the study area vicinity.
Rana muscosa	Mountain yellow-legged frog	FC, CSC, LTBMU	Inhabits ponds, tarns, lakes, and streams at moderate to high elevations.	Present. Potential suitable habitat present in the study area. Known occurrences present in the study area vicinity.
Birds				
Accipiter gentilis	Northern goshawk	FSC, CSC, LTBMU, MI, TRPA	Mature coniferous forests.	Known occurrence. Suitable habitat located within the study area. Known occurrences with associated buffers are located in the study area.
Anas platyrhynchos	Mallard	MI, TRPA	Shallow ponds, lakes, rivers, marshes and flooded fields. Nests in concealing vegetation.	Present. Potential suitable habitat is located within the study area.
Aquila chrysaetos	Golden eagle	CFP, CSC, TRPA	Nests on cliffs and in large trees in open areas. Hunts in rolling foothills, mountain areas, sage-juniper flats, and deserts.	Present. Potential suitable habitat located in the study area vicinity. Known occurrence in the study area vicinity.
Baeolophus inornatus	Oak titmouse	FSLC	Open oak and oak-pine woodlands. Nests mostly in natural cavities, also in woodpecker holes.	Present. Potential suitable habitat located in the study area. However, there are no known occurrences located in the study area vicinity.
Cinclus mexicanus	American dipper	FSLC	Along streams in mountainous areas.	Known occurrence. Observed in Upper Truckee River during URS wetland delineation survey.
Cypseloides niger	Black swift	FSC	Nests in moist crevice or cave on cliffs in proximity to waterfalls. Forages widely over many habitats.	Present. Potential suitable habitat is located within the study area. However, there are no known occurrences in the study area vicinity.
Dendroica petechia brewsteri	Yellow warbler	CSC	Breeds in riparian deciduous habitats.	Present. Potential suitable habitat found within the study area. However, no known occurrences in the study area vicinity.
Dendragapus obscurus	Blue grouse	MI	Open, mid- to mature-aged stands of fir, Douglas fir, and other conifer habitats interspersed with medium to large openings and available water.	Present. Suitable wintering habitat present within the study area. However, there are no known occurrences in the study area vicinity.
Dryocopus pileatus	Pileated woodpecker	MI	Dense, mature deciduous and coniferous forests, requires large territories.	Present. Suitable nesting habitat present in study area. However, there are no known occurrences in the study area vicinity.

Table 3.5-1 (Continued)
Special-Status Wildlife Species That Potentially Occur in the Study Area

Scientific Name	Common Name	Status	Habitat	Presence/Absence of Habitat/Species in the Study Area
Empidonax trailli ssp. *brewsteri*	Willow flycatcher	CE, LTBMU, MI	Nests in extensive montane willow thickets 2,000-8,000 feet elevation.	Present. Potential suitable habitat is located in the study area vicinity. Known occurrences in the study area vicinity.
Falco peregrinus anatum	Peregrine falcon	FD, CE, CFP, LTBMU, MI, TRPA	Nests and roosts on protected ledges.	Known occurrence. One Peregrine Falcon threshold area occurs within the study area. Suitable nesting habitat available in the study area vicinity.
Haliaeetus leucocephalus	Bald eagle	FT, FPD, CE, CFP, MI, TRPA	Coniferous and conifer -hardwood forests near water.	Known occurrence. One area has been identified as wintering habitat for the bald eagle within the study area. Suitable wintering and nesting habitat present in the study area.
Melenerpes lewis	Lewis' woodpecker	FSC	Primarily in open ponderosa pine forest, open riparian woodland dominated by cottonwood, and logged or burned pine forest.	Present. Potential suitable habitat present within the study area. However, there are no known occurrences in the study area vicinity.
Otus flammeolus	Flammulated owl	FSC	Old growth forest, especially ponderosa pine and mountainous pine forests. Depend on excavated holes by woodpeckers and flickers.	Present. Potential suitable habitat present in the study area. However, there are no known occurrences in the study area vicinity.
Pandion haliaetus	Osprey	CSC, TRPA	Conifer and conifer/hardwood forests near water.	Known occurrence. Suitable nesting sites present in the study area. Known occurrences and associated buffer zones occur with the study area.
Picoides albolarvatus	White headed woodpecker	FSC	Old growth forest of ponderosa pine, Jeffrey pine, and sugar pine.	Present. Potential suitable nesting sites present in the study area. However, there are no known occurrences located in the study area vicinity.
Riparia riparia	Bank swallow	CT	Requires sandy vertical bluffs or riverbanks for digging nest burrows. Nests in colonies.	Known occurrence. Suitable habitat present in the study area. There is one known occurrence within the study area.
Selasphorus rufus	Rufous hummingbird	FSC	Gardens, chaparral, meadows, forest edges, and riparian thickets of coniferous woodlands.	Present. Potential suitable habitat present in the study area. However, there are no known occurrences in the study area vicinity.
Strix occidentalis occidentalis	California spotted owl	FSC, CSC, LTBMU, MI	Mature forests with suitable nest sites.	Known occurrence. Suitable habitat present in the study area. There is a known occurrence and associated buffer located within the study area.
-	Waterfowl	TRPA	Aquatic habitats, wetlands, wetland edges.	Known occurrence. Suitable habitat present in the study area. Known occurrence data are not maintained for these species; however, they were observed during the URS wetland delineation survey.
Fish				
Oncorhynchus (=Salmo) clarki henshawi	Lahontan cutthroat trout	FT, CSC, MI, TRPA	Lakes and streams of the Lahontan Basin.	Known occurrence. Known to occur in Taylor Creek. Potential suitable habitats present in the study area.

Table 3.5-1 (Continued)
Special-Status Wildlife Species That Potentially Occur in the Study Area

Scientific Name	Common Name	Status	Habitat	Presence/Absence of Habitat/Species in the Study Area
Oncorhynchus (Salmo) mykiss ssp. *gairderi*	Rainbow trout	CSC, MI	Cold perennial freshwater systems statewide.	Present. Potential suitable habitat present in the study area; however, there are no known occurrences in the study area vicinity.
Salvelinus fontinalis	Brook trout	MI	High mountain lakes and streams, generally above 4,000' elevation, requires cool oxygenated waters.	Known occurrence. URS observed brook trout in small stream located adjacent to Grass Lake. Potential suitable habitat present in the study area.
Mammals				
Aplodontia rufa	Sierra Nevada mountain beaver	CSC	Dense riparian-deciduous forest, preferring open and intermediate canopy cover with dense understory near water. Deep, friable soils required for burrowing.	Present. Potential suitable habitat is located in study area. Known occurrences located in the study area vicinity.
Gulo gulo luteus	California wolverine	FSC, CT, CFP, LTBMU	Montane conifer, sub-alpine conifer, alpine dwarf-shrub, wet meadow, and montane riparian habitats. Prefer areas with low human disturbance.	Present. Potential suitable habitat present in the study areas. Known occurrences in the study area vicinity.
Lepus americanus tahoensis	Sierra Nevada snowshoe hare	FSC, CSC	Early successional montane forests with brushy understory.	Known occurrence. Suitable habitat present within the study area. Known occurrences present in the study area.
Martes americana	American marten	FSC, LTBMU	Mature coniferous forests.	Known occurrence. Suitable habitat present within the study area. Known occurrences present within the study area.
Martes pennanti pacifica	Pacific fisher	FC, CSC	Mature coniferous forests.	Known occurrence. Suitable habitat present within the study area. Known occurrences within the study areas. However, there have been no recent sightings.
Myotis evotis	Long eared myotis	FSC	Inhabits a variety of wooded habitats including montane forests. Roosts in buildings, crevices, under bark, and in snags.	Present. Potential suitable habitats present within the study area. However, there are no known occurrences in the study area vicinity.
Myotis thysanodes	Fringed myotis	FSC	Inhabits a variety of wooded habitats including coastal and montane forest and mountain meadows. Roosts in caves, mines, crevices and buildings.	Present. Potential suitable habitat present within the study area. Known occurrences in the study area vicinity.
Myotis volans	Long leg myotis	FSC	Commonly inhabits woodlands and forests above 4,000 feet. Habitats include forested and brushy areas. Roosts in rock crevices, buildings, tree bark, in snags, mines, and caves.	Present. Potential suitable habitat present within the study area. However, there are no known occurrences in the study area vicinity.

Table 3.5-1 (Concluded)
Special-Status Wildlife Species That Potentially Occur in the Study Area

Scientific Name	Common Name	Status	Habitat	Presence/Absence of Habitat/Species in the Study Area
Myotis yumanensis	Yuma myotis	FSC	Inhabits open forests and woodlands near water, especially in wooded canyon bottoms. Roosts in caves, mines, crevices, and buildings.	Present. Potential suitable habitat present within the study area. However, there are no known occurrences in the study area vicinity.
Odecoileus hemionus	Mule deer	MI, TRPA	Forests, brushfields, and meadows statewide.	Known occurrence. Observed during URS wetland delineation within the study area.
Taxidea taxus	American badger	CSC	Grasslands, savannas, and mountain meadows.	Present. Potential suitable habitat present in the study area. Known occurrences present within the study area vicinity.
Ursus americanus	Black bear	MI	Forested habitats statewide	Present. Potential suitable habitat present in the study area. There are no known occurrences in the study area vicinity. Species is somewhat tolerant of human presence.
Vulpes vulpes necator	Sierra Nevada red fox	CT, LTBMU	Coniferous forests above 5,000 feet, often associated with montane meadows.	Present. Potential suitable habitat present in the study area. Known occurrence within the study area vicinity.
Reptiles				
Sceloporus graciosus graciosus	Northern sagebrush lizard	FSC	Sagebrush dominated areas on forest slopes, mountain slopes and open flat lands.	Present. Potential suitable habitat present in the study area. However, there are no known occurrences in the study area vicinity.

Federal:
FC: Candidate for Federal Listing
FD: Federal Delisted
FE: Federal Endangered
FPD: Federal Proposed Delisting
FPE: Federal Proposed Endangered
FPT: Federal Proposed threatened
FSC: Federal Species of Concern - Species for which the USFWS has sufficient information to propose them as threatened or endangered under FESA.
FSLC: Federal Species of Local Concern
FT: Federal Threatened

State:
CE: CA Endangered
CFP: California Fully Protected Species
CR: CA Rare - Not currently threatened with extinction, but occurs in such small numbers that it may become endangered if its present environment worsens.
CSC: CA Special Concern
CT: CA Threatened

LTBMU:
LTBMU: Lake Tahoe Basin Management Unit Sensitive Species
MI: LTBMU Management Indicator Species; Land Resources Management Plan

TRPA:
TRPA: Tahoe Regional Planning Agency Special Interest Species

- Wildlife2000, LTBMU 2003, known occurrences within the Tahoe Basin
- Wildlife2000, LTBMU 2005, known occurrences within 0.8 km (0.5 mile) of the study area

Regulatory agency protocol–level species surveys would need to be performed for only those species with the potential to occur in the project area. Not all of the species listed in Table 3.5-1 have survey protocols established by the USFWS, and the potential for the species to occur would depend on the presence of site-specific habitat within each project segment. Table 3.5-1 should therefore be used to determine which types of surveys are appropriate and for which species.

3.5.1.2 Special-Status Plant Species

Sensitive plant species are known to occur or may occur in the project vicinity. Data on vegetation communities located within the study area and the plants associated with these communities were compiled and reviewed. This research focused on the special-status species that may occur in the study area. Some of the plants that were considered, though not formally listed, as rare or endangered under the Federal or California Endangered Species Acts (FESA or CESA) meet the definitions of the Native Plant Protection Act (California Fish and Game Code Section 1901) and are eligible for state listing. These plant species were treated as if they were already listed species for purposes of this investigation.

Special-status plant species that are potentially present in the study area were identified based on information compiled from the following resources:

- Forest Service Lake Tahoe Basin Management Area Sensitive Species List
- TRPA Goals and Policies Special Interest Species List
- CNDDB (December 2005)
- Forest Service 2004 Survey Data
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (online edition, v7-06a)
- USFWS Sensitive Species List for the Lake Tahoe Basin.

Official species lists were obtained from the USFWS for the nine quad areas surrounding the study area. Additionally, documented occurrence data were obtained from the CNDDB December 2005 database for the quad areas surrounding the study area (the 7.5-minute U.S. Geological Survey [USGS] quadrangles for Markleeville, Carson Pass, Caples Lake, Tragedy Spring, Minden, South Lake Tahoe, Freel Peak, Woodfords, Emerald Bay, Rockbound Valley, Pyramid Peak, Echo Lake, Loon Lake, Kings Beach, Tahoe City, Homewood, Meeks Bay, Granite Chief, and Wentworth Spring).

Table 3.5-2 lists the special-status plant species that are potentially present in the study area. Regulatory agency protocol-level species surveys would need to be completed only for those species with the potential to occur in the project area. These species include: Carson Range rock cress (*Arabis rigidissima* var. *demote*), creeping barberry (*Berberis aquifolium* var. *reperns*), upswept moonwort (*Botrychium ascendens*), scalloped moonwort (*Botrychium crenulatum*), western goblin (*Botrychium montanum*), Bolander's candle moss (*Bruchia bolanderi*), shore

sedge (*Carex limosa*), subalpine fireweed (*Epilobium howellii*), Oregon fireweed (*Epilobium oreganum*), marsh willowherb (*Epilobium palustre*), starved daisy (*Erigeron miser*), Nevada daisy (*Erigeron nevadincola*), American manna grass (*Glyceria grandis*), short-leaved hulsea (*Hulsea brevifolia*), vein water lichen (*Hydrothyria venosa*), saw-toothed lewisia (*Lewisia serrata*), three-ranked hump moss (*Meesia triquetra*), broad-nerved hump-moss (*Meesia uliginosa*), northern adder's tongue (*Ophioglossum pusillum*), Stebbin's phacelia (*Phacelia stebbinsii*), holly fern (*Polystichum lonchitis*), Nuttall's pondweed (*Potamogeton epihydrus* ssp. *nuttallii*), slender-leaved pondweed (*Potamogeton filliformis*), water bulrush (*Scirpus subterminalis*), marsh skullcap (*Scutellaria galericulata*), Munroe's desert mallow (*Sphaeralcea munroana*), and felt-leaved (=woolly) violet (*Viola tomentosa*).

3.5.1.3 Sensitive Habitat

The eight proposed project segments along US 50 and SR 89 cross 12 habitat types, as classified in *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, 1988). These habitats were categorized as aspen, Jeffrey pine, lodgepole pine, montane chaparral, montane riparian, perennial grass, red fir, sagebrush, Sierran mixed conifer, sub-alpine mixed conifer, wet meadow, and white fir. The study area also includes highly developed urban areas, such as portions of project segments within the city limits of South Lake Tahoe.

These habitats fall within 14 different watersheds, which drain into creeks and meadows and ultimately into Lake Tahoe. Wetlands, SEZs, and other waters of the United States occur within these watersheds and are crossed by the project segments. Wetlands and other waters of the U.S. are addressed in Sections 3.2 and 3.4. SEZs are discussed in Section 3.5.1.4.

Potential impacts were quantified by overlaying the project features that have been defined to date (proposed detention/retention basins and paving of existing and new highway pullout areas) with the identified resources. Wildlife habitat types crossed by each highway and each segment have been mapped using data from the Forest Service and TRPA.

Table 3.5-2
Special-Status Plant, Lichen, and Moss Species That Potentially Occur in the Study Area

Scientific Name	Common Name	Federal[1]/ State[2]/CNPS[3]/ LTBMU/TRPA	Habitat	Presence/Absence of Habitat/Species in the Study Area
Arabis rigidissima var. *demote*	Carson Range rock cress	-/-/1B/LTBMU/-	Broadleaved upland forest, upper montane coniferous forest/rocky, 2255-2650 m	Present. Suitable habitat found at high elevations in the study area. No known occurrences from the study area vicinity.
Berberis aquifolium var. *reperns*	Creeping barberry	-/-/-/LTBMU/-	Streambanks of yellow pine and red fir forests, chaparral; elevation 0-2200 m	Present. Suitable habitat found throughout the study area. No known occurrences from the study area vicinity.
Botrychium ascendens	Upswept moonwort	-/-/2/LTBMU	Lower montane coniferous forest (mesic), 1500-2285 m	Present. Suitable habitat found throughout the study area. No known occurrences from the study area vicinity.
Botrychium crenulatum	Scalloped moonwort	-/2/LTBMU/-	Bogs and fens, 1500-3280 m	Present. Suitable habitat found throughout the study area. Known occurrences from the study area vicinity.
Botrychium montanum	Western goblin	-/-/2/LTBMU/-	Lower montane coniferous forest (mesic): elevation 1500-1830 m	Present. Suitable habitat found throughout the study area. No known occurrences in the Tahoe Basin.
Bruchia bolanderi	Bolander's candle moss	-/-/2/LTBMU/-	Lower montane coniferous forest, meadows and seeps, upper montane coniferous forest/damp soil: elevation 1700-2800 m	Present. Suitable habitat found throughout the study area. No known occurrences in the Tahoe Basin.
Calochortus clavatus var. *avius*	Pleasant Valley mariposa lily	-/-/1B/-/-	Lower montane coniferous forest (Josephine silt loam and volcanic), 305-800 m	Absent. Suitable soils not found in the study area; occurs outside of the elevation range of the study area.
Carex limosa	Shore sedge	-/-/2/-/-	Bogs and fens, 1200-2700 m	Present. Suitable habitat found throughout the study area. Known occurrence in the study area vicinity.
Chaenactis douglasii var. *alpina*	Alpine dusty maidens	-/-/2/-/-	Alpine boulder and rock field (granitic), 3000-3400 m	Absent. Occurs outside of the elevation range of the study area.
Claytonia megarhiza	Fell-fields claytonia	-/-/2/-/-	Alpine boulder and rock field, subalpine coniferous forest/rocky, 2600-3300 m	Absent. Occurs outside of the elevation range of the study area.
Cryptantha crymophila	Subalpine cryptantha	-/-/1B/-/-	Subalpine coniferous forest (volcanic, rocky), 2600-3200 m	Absent. Occurs outside of the elevation range of the study area.
Draba asterophora var. *asterophora*	Tahoe draba	-/-/1B/ LTBMU/TRPA	Subalpine coniferous forest, 2500-3505 m	Absent. Occurs outside of the elevation range of the study area.
Draba asterophora var. *macrocarpa*	Cup Lake draba	-/-/1B/ LTBMU/TRPA	Subalpine coniferous forest (rocky), 2500-2815 m	Absent. Occurs outside of the elevation range of the study area.
Epilobium howellii	Subalpine fireweed	-/-/1B/LTBMU/-	Meadows and seeps, subalpine coniferous forest/mesic; elevation 2000-2700 m	Present. No known occurrences in the Tahoe Basin.
Epilobium oreganum	Oregon fireweed	-/-/1B/-/-	Bogs and fens, mesic sites in lower and upper montane coniferous forests, 500-2240 m	Present. Suitable habitat found throughout the study area. Known occurrence in the study area vicinity.

Table 3.5-2 (Continued)
Special-Status Plant, Lichen, and Moss Species That Potentially Occur in the Study Area

Scientific Name	Common Name	Federal[1]/ State[2]/CNPS[3]/ LTBMU/TRPA	Habitat	Presence/Absence of Habitat/Species in the Study Area
Epilobium palustre	Marsh willowherb	-/-/2/-/-	Bogs and fens, 2200 m	Present. Suitable habitat found throughout the study area. Known occurrence in the study area vicinity.
Erigeron miser	Starved daisy	-/-/1B/LTBMU/-	Upper montane coniferous forest (rocky); elevation 1840-2620 m	Present. Suitable habitat found throughout the study area. No known occurrences from the study area vicinity.
Erigeron nevadincola	Nevada daisy	-/-/2/-/-	Great Basin scrub, 1400-2900 m	Present. Suitable habitat limited in the study area and species is unlikely to occur. No known occurrences from the study area vicinity.
Eriogonum umbellatum var. *torreyanum*	Donner Pass buckwheat	-/-/1B/LTBMU/-	Upper montane coniferous forest (volcanic, rocky), meadows and seeps, 1855-2620 m	Absent. No suitable habitat in the study area. No known occurrences from the study area vicinity.
Glyceria grandis	American manna grass	-/-/2/-/-	Bogs and fens, 15-1980 m	Present. Suitable habitat found throughout the study area.
Hulsea brevifolia	Short-leaved hulsea	-/-/1B/-/-/	Lower and upper montane coniferous forest/granitic or volcanic, gravelly or sandy, 1500-3200 m	Present. Suitable habitat limited in the study area and species is unlikely to occur. Known occurrence in the study area vicinity.
Hydrothyria venosa	Vein water lichen	-/-/-/LTBMU/-		Present. Suitable habitat found throughout the study area. No known occurrences from the study area vicinity.
Ivesia sericoleuca	Plumas ivesia	-/-/1B/-/-	Great Basin scrub, lower montane coniferous forest, meadows and seeps, vernal pools/vernally mesic, usually volcanic, 1465-2200 m	Absent. No suitable habitat in the study area. No known occurrences of this species known from the study area vicinity.
Lewisia longipetala	Long-petaled lewisia	-/-/2/ LTBMU/-	Subalpine coniferous forest (mesic, rocky) /granitic, alpine boulder and rock field, 2500-2925 m	Absent. Occurs outside of the elevation range of the study area.
Lewisia serrata	Saw-toothed lewisia	-/-/1B/-/-/-	Broadleaved upland forest, lower montane coniferous forest, riparian forests, 900-1435 m	Present. Suitable habitat found throughout the study area.
Meesia triquetra	Three-ranked hump moss	-/-/1B/LTBMU/-	Upper montane coniferous forest (mesic), meadows and seeps, bogs and fens, 1300-2500 m	Present. Suitable habitat found throughout the study area. Known occurrence in the study area vicinity.
Meesia uliginosa	Broad-nerved hump-moss	-/-/2/LTBMU/-	Meadows and seeps, upper montane coniferus forest/damp soil: elevation 1300-2500 m	Present. Suitable habitat found throughout the study area. No known occurrences from the study area vicinity.
Ophioglossum pusillum	Northern adder's tongue	-/-/3/-/-	Marshes and swamps (margins), valley and foothill grassland, 1000-2000 m	Present. Suitable habitat found throughout the study area.

Table 3.5-2 (Concluded)
Special-Status Plant, Lichen, and Moss Species That Potentially Occur in the Study Area

Scientific Name	Common Name	Federal[1]/ State[2]/CNPS[3]/ LTBMU/TRPA	Habitat	Presence/Absence of Habitat/Species in the Study Area
Phacelia stebbinsii	Stebbin's phacelia	-/-/2/-/-	Lower montane coniferous forest, meadows and seeps, cismontane woodland, 610-2010 m	Present. Suitable habitat found throughout the study area.
Polystichum lonchitis	Holly fern	-/-/3/-/-	Upper montane coniferous forest/granitic or carbonate, Subalpine coniferous forest, 1800-2600 m	Present. Suitable habitat found throughout the study area.
Potamogeton epihydrus ssp. *nuttallii*	Nuttall's pondweed	-/-/2/-/-	Marshes and swamps (assorted shallow freshwater), 400-1900 m	Present. Suitable habitat found throughout the study area.
Potamogeton filliformis	Slender-leaved pondweed	-/-/2/-/-	Marshes and swamps (shallow freshwater), 300-2150 m	Present. Suitable habitat found throughout the study area. Known occurrence in the study area vicinity.
Rorippa subumbellata	Tahoe yellow cress	C/E/1B/ LTBMU/TRPA	Meadows and seeps/decomposed granitic beaches, lower montane coniferous forest, sandy areas of riparian communities, 1895-1900 m	Present. Suitable habitat found throughout the study area. Known occurrence in the study area vicinity.
Scirpus subterminalis	Water bulrush	-/-/2/-/-	Marshes and swamps (montane lake margins), bogs and fens, 750-2250 m	Present. Suitable habitat found throughout the study area. Known occurrence in the study area vicinity.
Scutellaria galericulata	Marsh skullcap	-/-/2/-/-	Lower montane coniferous forest, meadows and seeps, marshes and swamps, 0-2100 m	Present. Suitable habitat found throughout the study area. Known occurrence in the study area vicinity.
Sphaeralcea munroana	Munroe's desert mallow	-/-/2/-/-	Great Basin scrub, 2,000 m	Present. Suitable habitat limited in the study area and species is unlikely to occur. No known occurrences in the project vicinity. Plant not observed in the Tahoe Basin since 1922.
Viola tomentosa	Felt-leaved (=woolly) violet	-/-/4/-/-	Lower montane, subalpine and upper montane coniferous forest/gravelly, 1435-2000 m	Present. Suitable habitat found throughout the study area. No known occurrences in the study area vicinity.

Federal:
FE: Federal Endangered; FT: Federal Threatened; FPE: Federal Proposed Endangered; FPT: Federal Proposed threatened; FC: Candidate for Federal Listing; FPD: Federal Proposed Delisting; FSC: Federal Species of Concern
State:
CE: CA Endangered; CT: CA Threatened; CR: CA rare; Not presently threatened with extinction, it is in such small numbers that it may become endangered if its present environment worsens. CSC: California Special Concern

CNPS:
CNPS List 1B: California Native Plant Society list of plants rare, threatened or endangered in California; CNPS List 2: California Native Plant Society list of plants rare, threatened or endangered in California, but more common elsewhere; CNPS List 3: California Native Plant Society list of plants about which there is a need for more information- a review list; CNPS List 4: California Native Plant Society list of plants of limited distribution- a watch list.
LTBMU:
Lake Tahoe Basin Management Unit Sensitive Species
TRPA:
Tahoe Regional Planning Agency Special Interest Species

3.5.1.4 Stream Environment Zones

A total of 38.753 ha (95.76 acres) of SEZ features fall within the study area. SEZs are resources defined by TRPA and were obtained from TRPA data. SEZs generally encompass wetlands and other waters of the United States as well as drainage areas that contain specific key and secondary indicators. These indicators include evidence of water flow, primary and or secondary vegetation (defined by TRPA), near-surface groundwater, lakes, ponds, and certain soil types. SEZs can be identified by the presence of any one of the key indicators or three of the secondary indicators. Key indicators include the presence of beach; Elmira loamy coarse sand, wet variant; or marsh soil types. Secondary indicators include soils such as loamy alluvial sand, Celio gravelly loamy coarse sand, or gravelly alluvial sand. Key and secondary indicator soils are found in various locations throughout the study area. See the *Wetland Delineation Report* (URS 2007a) for a more detailed description of the soil units in the project area.

Quantitative estimates of each SEZ found in the study area were calculated using GIS analyses. The *Wetland Delineation Report* (URS 2007a) identifies SEZs in the study area in Figure 4 of Appendix A and provides additional details about each SEZ in Appendix B.

3.5.2 Regulatory Setting

The following section summarizes the jurisdictional and resource regulatory setting within the study area.

3.5.2.1 Federal

U.S. Fish and Wildlife Service

Federal Endangered Species Act

Biological assessments are required under Section 7(c) of the FESA (16 United States Code [USC] 1536) if listed species or critical habitat may be present in an area affected by any major construction activity conducted by, or subject to issuance of a permit from, a federal agency. Federally listed species have the potential to be present in the vicinity of the study area. A list of threatened and endangered species in the study area was downloaded from the Sacramento Office of the USFWS on August 22, 2005. Federally listed species, candidate species, and species of special concern that may occur within the study vicinity are listed in Tables 3.5-1 and 3.5-2.

Migratory Bird Species Act

The federal Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703–711) makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). If impacts to active nests or individual birds are anticipated, Caltrans shall consult with USFWS regarding appropriate action to comply with the MBTA.

Forest Service

The proposed Program would impact lands under the jurisdiction of the Forest Service LTBMU. A Biological Evaluation process (Forest Service Manual 2672.43) is followed to conduct and document activities necessary to demonstrate that proposed management actions will not likely jeopardize the continued existence or cause adverse modification to habitat for federally listed species, or for species listed as Sensitive by Region 5 of the Forest Service.

Current management direction for the LTBMU derives from a combination of the *Sierra Nevada Forest Plan Amendment Final Environmental Impact Statement* (SNFP FEIS) (Forest Service 2001), applicable components of LTBMU Land and Resource Management Plan, and TRPA guidance. Caltrans will strive to adhere to the management direction provided in these documents to avoid and reduce impacts to sensitive species, and for mitigation guidelines.

In relation to the Program, the Sierra Nevada Forest Plan Amendment prohibits vegetation management activities such as vegetation removal or reduction in the following areas:

- Within 0.4 km (0.25 mile) of a California spotted owl nest site during the breeding season (March 1 to August 31)
- Within 0.4 km (0.25 mile) mile of northern goshawk nest site during the breeding season (February 15 to September 15)
- Within 1.2 km (0.75 mile) of great grey owl nest site during the breeding season (March 1 to August 15)
- Within a 40.5 ha (100 acre) buffer area of the highest quality surrounding an American pine marten den site during the breeding and rearing season (May 1 to July 31)
- Within an 8 km (5 mile) radius of a Sierra Nevada red fox detection during the breeding and rearing season (May 1 to July 31) for 2 years following the detection

Exceptions to management directions for specific biological resources relevant to the proposed highway rehabilitation are provided in Appendix A of the SNFP FEIS Record of Decision (Forest Service 2001, A-29).

The LTBMU *Land and Resource Management Plan* (Forest Service 1988) states the Forest Service must manage habitat of designated Management Indicator Species in order to maintain viable population levels within the Tahoe Basin. In relation to the Program, the *Land and Resource Management Plan*:

- Prohibits the loss of trees greater than 0.8 meter (30 inches) in diameter at breast height (dbh)
- Limits the creation of forest openings to 0.8 ha (2 acres)
- Requires retention of all snags, except those that pose a safety hazard, and all downed material
- Prohibits land disturbing activity within 91.4 meters (300 feet) of perennial stream riparian zone unless the project is beneficial to the watershed
- Prohibits land-disturbing activities within 45.7 meters (150 feet) of seasonal stream riparian zones

- Limits activity within 0.4 km (0.25 mile) of known spotted owl and northern goshawk nest sites between March 1 and August 31 and February 15 and September 15, respectively
- Limits activity near forest carnivore dens as follows: 202.3 ha (500 acres) for Pacific fisher from March 1 to June 30; 40.5 ha (100 acres) for American marten from May 1 to July 31; 101.2 ha (250 acres) for Sierra Nevada red fox from April 15 to June 15
- Limits noisy, ground disturbing activity within forest carnivore habitat for more than seven consecutive days in a drainage area
- Requires sanitary waste facilities to be located outside riparian areas, except where no reasonable alternative exists

In addition, the Forest Service has established special management areas for unique areas that have scientific, biological, geological, historical, or recreational characteristics of local, regional, or national significance. In the study area, special management areas include the Grass Lake Research Natural Area.

3.5.2.2 State

California Environmental Quality Act

The following are CEQA significance criteria that could potentially apply to the proposed Program.

- Long-term degradation of a sensitive plant community because of substantial alteration of landform or site conditions
- Substantial loss of a plant community and associated wildlife habitat
- Fragmentation or isolation of wildlife habitats, especially riparian and wetland communities
- Substantial disturbance of wildlife resulting from human activities
- Avoidance by fish of biologically important habitat for substantial periods, which may increase mortality or reduce reproductive success
- Disruption of natural wildlife movement corridors
- Substantial reduction in local population size attributable to direct mortality or habitat loss, lowered reproductive success, or habitat fragmentation of:
  - Species qualifying as rare under California Endangered Species Act
  - Species that are state-listed or federally listed as threatened or endangered
  - Portions of local populations that are candidates for state or federal listing and federal and state species of concern
- Substantial reduction or elimination of species diversity or abundance of any species of animal
- Conflict with any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or any other regional or state habitat conservation plan, local ordinance, or policy

California Department of Fish and Game

Section 1602

Areas within the jurisdiction of California Fish and Game Code Sections 1600–1616 include all perennial, intermittent, and ephemeral rivers, streams, and lakes in the state, including their beds and banks. Several streams were observed within the study area, and consultation with state resource agencies will be necessary in accordance with legal requirements set forth under Sections 1600–1616. A Section 1602 Lake and Streambed Alteration Agreement will be required for all work conducted within the jurisdiction.

California Endangered Species Act

Because state-listed species may be impacted by the proposed Program, consultation with state resource agencies is necessary in accordance with legal requirements set forth under Sections 2050–2098 of the California Fish and Game Code. For projects that affect both a state and federal listed species, compliance with the FESA will satisfy the CESA if the CDFG determines that the federal incidental take authorization is "consistent" with CESA under Fish and Game Code Section 2080.1.

Native Plant Protection Act

The Native Plant Protection Act of 1977 (California Fish and Game Code Sections 1900–1913) directs the CDFG to preserve, protect, and enhance rare and endangered plants in the state and protect them as endangered or rare. No species protected by this Act are expected to be impacted by the proposed Program, and no consultation with state resource agencies is anticipated in accordance with these requirements.

3.5.2.3 Regional

The TRPA has established thresholds for fisheries, vegetation, wildlife, and SEZs. The following thresholds may apply to the proposed Program.

Fisheries

- F1 – Maintain 121 km (75 miles) of habitat rated excellent, 169 km (105 miles) of habitat rated good, and 61 km (38 miles) of marginal stream habitat.
- F2 – A nondegradation standard shall apply to fish habitat in Lake Tahoe.
- F3 – Achieve the equivalent of 2,407 total ha (5,948 total acres) of excellent habitat in Lake Tahoe.
- F4 – Until instream flow standards are established in the Regional Plan to protect fishery values, nondegradation standards shall apply to instream flows.
- F5 – It shall be a policy of the TRPA governing board to seek transfers of existing points of water diversion from streams to Lake Tahoe.
- F6 – It shall be the policy of the TRPA governing board to support, in response to justifiable evidence, state and federal efforts to reintroduce Lahontan cutthroat trout.

Vegetation

- V1 – Increase plant and structural diversity of forest communities through appropriate management practices as measured by diversity indices of species richness, relative abundance, and pattern. Provide for promotion and perpetuation of late successional/old growth forests. The goal is to increase late successional/old growth conditions across elevational ranges of the Lake Tahoe Basin forest cover types. Individual trees greater than 0.8 meter (30 inches) dbh shall also be favored for retention because of their late seral attributes.
- V2 – Provide for the nondegradation of the natural qualities of any plant community that is uncommon to the region or of exceptional scientific, ecological, or scenic values. This threshold shall apply but not be limited to deep-water plants of Lake Tahoe, Grass Lake (sphagnum bog), Osgood swamp, and the Freel Peak cushion plant community.
- V3 – Maintain a minimum number of population sites for each of five sensitive plant species: *Carex paucifructus, Lewisia pygmaea logipetala, Draba asterophora* v. *macrocarpa*; *Draba asterophora* v. *asterophora*; and *Rorippa subumbellata*.

Wildlife

- W1 – Wildlife protection and maintenance of special-interest species viability in the Lake Tahoe Region. Provide a minimum number of population sites and disturbance zones for the following species: (1) northern goshawk (*Accipiter gentilis*); (2) osprey (*Pandion Haliaetus*); (3) bald eagle (*Haliaeetus leucocephalus*); (4) golden eagle (*Aquila chrysaetos*); (5) peregrine falcon (*Falco peregrinus anatum*); (6) waterfowl (all open-water associated species); and (7) deer (*Odocoileus hemionus*).

Stream Environment Zones

The TRPA regulates SEZ resources through the agency's *Regional Plan for the Lake Tahoe Basin* (TRPA 1987) and Code of Ordinances. SEZs include all natural marshes, meadows, watercourses, drainage ways, and floodplains that provide surface water conveyance from terrestrial upland areas to Lake Tahoe and its tributary streams. SEZs are determined by the presence of riparian vegetation, alluvial soil, minimum buffer strips, water influence areas and/or floodplains. Vegetation within SEZs is important for wildlife habitat, water purification, retention of soils and associated nutrients, and aesthetic value. Protection and restoration of SEZs is essential for achieving water quality, vegetation, and soil conservation thresholds. The SEZ goals and policies established for SEZs in the Lake Tahoe Basin are discussed in detail in the *Natural Environment Study* for the proposed Program (URS 2007b).

Threshold V1 (listed above) includes a nondegradation standard for native deciduous trees, wetlands, and meadows. It also calls for the preservation of the richness and abundance of wetland and riparian-associated species. Similarly, uncommon plant species are protected by Vegetation Thresholds.

3.5.2.4 Local

El Dorado County

- Goals and policies were established within the El Dorado County General Plan that provide guidance for development in the county specific to biological resources. Caltrans will generally follow these policies to protect trees, water quality, and natural habitats, and to control erosion.

City of South Lake Tahoe

The City of South Lake Tahoe is a rapidly growing summer and winter resort destination located along the south shore of Lake Tahoe. The City Code of Ordinances regulates tree removal on both private and public property within the city limits. Trees with a diameter of 15 cm (6 inches) or greater when measured 0.6 meter (2 feet) above the ground fall within this ordinance.

3.5.3 Impacts

3.5.3.1 CEQA Considerations

Permanent impacts would primarily occur where paving and grading of wider shoulders and pullouts is performed, new retaining walls are constructed, and drainage facilities (primarily the proposed drainage basins) are installed. This construction will occur alongside the existing highways and will extend outside of the existing right-of-way where new drainage facilities are installed. This will require removal of existing vegetation within the drainage areas and where the minimal highway widening impacts vegetation alongside the shoulders, such as where cut and fill is necessary along slopes and embankments. Temporary impacts could include loss of vegetation where equipment access and work areas are necessary. Noise levels and construction activities could also cause temporary disturbance to wildlife species.

Avoidance and mitigation measures are identified that include seasonal timing restrictions for construction activities to avoid periods of time when wildlife species are most vulnerable, such as during breeding seasons. Preconstruction surveys would be performed in areas of known habitat of sensitive species to verify whether the species is present; and if so, to apply avoidance measures. Construction contract specifications would include establishing Environmentally Sensitive Areas (ESAs); imposing construction clean-up, weed control, and erosion control measures; restricting in-stream work; and restoring disturbed vegetation.

Impacts to Special-Status Wildlife Species

The potential Program-related impacts to sensitive wildlife species based on known occurrences and buffer zones located within the study area are summarized in Table 3.5-3. This table identifies potential impacts to known biological resources and the location by roadway and segment within the implementation sequence. Some of the CNDDB information provided in the table includes historical occurrence information and may not reflect current conditions. The table does not reflect site-specific survey information, and impacts to sensitive species could potentially be greater depending on the results of focused surveys. The impacts listed in this table assume complete development of the study limits and within proposed/existing basins. Refined impacts to wildlife resources should be conducted based on the results of focused specific surveys and preparation of detailed Program development plans.

Table 3.5-3
Potential Program-Related Impacts to Special-Status Wildlife Species

Wildlife Species	Impact, Hectares (Acres)			Roadway/ Segment
	ESL	PB	EB	
CNDDB Database				
Pacific fisher		1.062 (2.62)		89/1
Sierra Nevada snowshoe hare/American badger		0.194 (0.48)		50/1
Sierra Nevada snowshoe hare/American badger		0.299 (0.74)		50/1
Sierra Nevada snowshoe hare/American badger		0.180 (0.45)		50/1
Sierra Nevada snowshoe hare/American badger		1.270 (3.14)		50/1
Sierra Nevada snowshoe hare/American badger		1.378 (3.40)		50/1
Sierra Nevada snowshoe hare/American badger		0.282 (0.70)		50/1
Sierra Nevada snowshoe hare/American badger		0.213 (0.53)		50/1
Sierra Nevada snowshoe hare/American badger		0.114 (0.28)		50/1
Sierra Nevada snowshoe hare/American badger		0.093 (0.23)		50/1
Northern goshawk		0.070 (0.17)		50/2
Northern goshawk		0.146 (0.36)		50/2
Northern goshawk		0.183 (0.45)		50/2
Northern goshawk		0.084 (0.21)		50/2
Northern goshawk		0.167 (0.41)		50/ 2
Northern goshawk		0.138 (0.34)		50/2
Northern goshawk		0.424 (1.05)		50/2
Northern goshawk		0.964 (2.38)		50/2
Northern goshawk		0.034 (0.08)		50/2
Northern goshawk		0.116 (0.29)		50/2
Northern goshawk		0.080 (0.20)		50/2
Northern goshawk		0.781 (1.93)		50/2
Northern goshawk		0.034 (0.08)		50/2
Northern goshawk		0.080 (0.20)		50/1
Northern goshawk		0.136 (0.34)		50/1
Bank swallow		0.072 (0.18)		89/2
Bank swallow		0.236 (0.58)		89/2
Bank swallow		0.126 (0.31)		89/2
Bank swallow		0.476 (1.18)		89/2
Bank swallow		0.381 (0.94)		89/2
Bank swallow		0.193 (0.48)		89/2
Bank swallow		0.143 (0.35)		89/2
Bank swallow		0.066 (0.16)		89/2
Sierra marten		0.511 (1.26)		89/2
Sierra Nevada snowshoe hare		0.207 (0.51)		89/4
Sierra Nevada snowshoe hare		0.197 (0.49)		89/4
Sierra Nevada snowshoe hare		0.098 (0.24)		89/4
Sierra Nevada snowshoe hare		0.057 (0.14)		89/4
Sierra Nevada snowshoe hare		0.043 (0.11)		89/4
Sierra Nevada snowshoe hare		0.182 (0.45)		89/4

Table 3.5-3 (Continued)
Potential Program-Related Impacts to Special-Status Wildlife Species

Wildlife Species	Impact, Hectares (Acres)			Roadway/ Segment
	ESL	PB	EB	
Sierra Nevada snowshoe hare		0.126 (0.31)		89/4
Sierra Nevada snowshoe hare		0.101 (0.25)		89/4
Sierra Nevada snowshoe hare		0.133 (0.33)		89/4
Sierra Nevada snowshoe hare		0.146 (0.36)		89/4
Sierra Nevada snowshoe hare		0.034 (0.08)		89/4
Sierra Nevada snowshoe hare		0.058 (0.14)		89/4
Pacific fisher		0.009 (0.02)		89/5
Pacific fisher		0.491 (1.21)		89/5
Pacific fisher		0.018 (0.04)		89/5
Sierra Nevada snowshoe hare/American badger		0.059 (0.15)		50/1
Northern goshawk			0.034 (0.08)	50/2
Northern goshawk			0.149 (0.37)	89/2
Northern goshawk			0.212 (0.52)	89/2
Northern goshawk			0.122 (0.30)	89/2
Bank swallow			0.249 (0.61)	89/2
Northern goshawk	19.165 (47.36)			50/2
Pacific fisher	34.613 (85.53)			89/1
Sierra Nevada snowshoe hare/American badger	27.184 (67.17)			50/1
Northern goshawk	3.015 (7.45)			89/2
Lahontan cutthroat trout	0.998 (2.47)			89/2
Bank swallow	12.927 (31.94)			89/2
Sierra marten	3.703 (9.15)			89/2
Sierra marten	0.003 (0.01)			89/2
Sierra marten	0.861 (2.13)			89/3
Sierra Nevada snowshoe hare	23.858 (58.95)			89/4
Pacific fisher	3.353 (8.29)			89/4
Sierra marten	3.008 (7.43)			89/2
TRPA Database				
Bald Eagle-Winter Habitat	21.881 (54.07)			89/2 & 3
Bald Eagle-Winter Habitat			0.003 (0.01)	89/3
Bald Eagle-Winter Habitat		0.557 (1.38)		89/2
Bald Eagle-Winter Habitat		0.113 (0.28)		89/3
Bald Eagle-Winter Habitat		0.110 (0.27)		89/3
Bald Eagle-Winter Habitat		0.204 (0.51)		89/3
Bald Eagle-Winter Habitat		0.069 (0.17)		89/3
Bald Eagle-Winter Habitat		0.015 (0.04)		89/3
Bald Eagle-Winter Habitat		0.077 (0.19)		89/3
Bald Eagle-Winter Habitat		0.006 (0.02)		89/3
Northern Goshawk-PAC	0.286 (0.71)			89/2
Northern Goshawk-PAC	5.513 (13.62)			50/2
Northern Goshawk-PAC		0.127 (0.31)		50/2

Table 3.5-3 (Concluded)
Potential Program-Related Impacts to Special-Status Wildlife Species

Wildlife Species	Impact, Hectares (Acres)			Roadway/ Segment
	ESL	PB	EB	
Northern Goshawk-PAC		0.432 (1.07)		50/2
Northern Goshawk-PAC		0.060 (0.15)		50/2
Northern Goshawk-PAC		0.179 (0.44)		50/2
Northern Goshawk-PAC		0.002 (0.00)		50/2
Northern Goshawk-PAC		0.076 (0.19)		50/2
Osprey-0.25 mile buffer	5.577 (13.78)			
Osprey-0.25 mile buffer	2.287 (5.65)			
Osprey-0.25 mile buffer	2.319 (5.73)			
Osprey-0.25 mile buffer	2.884 (7.13)			
Osprey-0.25 mile buffer	1.405 (3.47)			
Osprey-0.25 mile buffer	1.735 (4.29)			
Osprey-0.25 mile buffer	0.814 (2.01)			
Osprey-0.25 mile buffer	0.188 (0.47)			
Osprey-0.25 mile buffer			0.003 (0.01)	89/3
Osprey-0.25 mile buffer		0.155 (0.38)		89/4
Osprey-0.25 mile buffer		0.082 (0.20)		89/4
Osprey-0.25 mile buffer		0.147 (0.36)		89/4
Osprey-0.25 mile buffer		0.101 (0.25)		89/4
Osprey-0.25 mile buffer		0.058 (0.14)		89/4
Osprey-0.25 mile buffer		0.103 (0.25)		89/3
Osprey-0.25 mile buffer		0.205 (0.51)		89/3
Osprey-0.25 mile buffer		0.069 (0.17)		89/3
Osprey-0.25 mile buffer		0.015 (0.04)		89/3
Osprey-0.25 mile buffer		0.006 (0.02)		89/3
Spotted Owl-HRCA	0.849 (2.10)			89/1
Total	**44.890 (113.03)**	**2.968 (7.28)**	**0.006 (0.02)**	

EB = Existing basin

ESL = Environmental study limit (same as study area)

PB = Proposed basin

Impacts to Special-Status Plant Species

Potential impacts to sensitive plant species could include permanent, temporary, and indirect effects. Permanent impacts could include loss or degradation of habitat due to creation of drainage basins. Temporary impacts, which would occur only during the construction period, could include increased erosion and vehicle disturbances of habitat. Indirect effects are those that may result after Program implementation, such as altered hydrology, introduction of invasive non-native species, or reduced genetic exchange.

Impacts to native vegetation, including sensitive plants and SEZ vegetation within the project area due to an increase in noxious weed spread as a result of the proposed Program are possible but not likely. Relatively few noxious weeds are known from the project area, and avoidance

strategies and design features would be implemented to reduce the spread of noxious weeds as described in Section 3.5.4. In general, the amount of disturbance associated with Program activities would be relatively low, given the limited extent of impacts adjacent to the existing roadway. Therefore, the habitat changes due to construction activities (reduced shade and soil cover) that could increase noxious weed growth would be relatively minor.

Impacts to Sensitive Habitats

Potential impacts to sensitive habitat could include permanent, temporary, and indirect effects. Permanent impacts include loss or degradation of habitat due to creation of drainage basins. Temporary impacts, occurring only during the construction period, include increased erosion and vehicle disturbances of habitat. Indirect effects are those that may result after implementation of the Program, such as altered hydrology, introduction of invasive non-native species, or reduced genetic exchange.

3.5.3.2 TRPA Considerations

Impacts to Special-Status Wildlife Species

Three TRPA special-interest species were identified in the wildlife databases as having the potential to occur within the project area: northern goshawk, bald eagle, and osprey. Habitat for mule deer and waterfowl, two other TRPA special-interest wildlife categories, is also potentially present in the project area.

Program construction and the associated equipment noise and movement have the potential to disrupt wildlife behavior. However, construction would take place along existing highways that are primary traffic routes in the Lake Tahoe Basin. The highways already present barriers to wildlife movement due to the presence of heavy traffic during the day. Daytime construction along the roadways, if limited to the hours of 8 a.m. to 6:30 p.m., would not present a significant change to the corridor in terms of wildlife movement, except for the potential presence of temporary fencing surrounding the work sites. Because construction would transition along each project segment, opportunities for wildlife to cross the roadways would be similar to existing conditions.

Removal of trees and vegetation along highway shoulders or for proposed basins and drainage facilities could eliminate some wildlife habitat. Specific acreages of tree/vegetation removal will be defined during the development of plans for each segment. Any existing trees over 0.8 meter (30 inches) dbh will be avoided or removal will be minimized consistent with the TRPA Threshold V1, but some tree removal will likely be unavoidable, resulting in an adverse impact with respect to this threshold.

Work at creek crossings has the potential to temporarily impair fish passage, which may be inconsistent with TRPA Threshold F2. If work is necessary at creek crossings, contractor requirements will be required to avoid or minimize obstructions, and the design of culvert installation will have to provide for fish passage, depending on the creek or tributary.

Impacts to Stream Environment Zones

Direct and indirect impacts to SEZ areas are expected to occur from the proposed construction of infiltration and sediment detention basins, retrofitting of existing basins, paving of pullout areas

on the sides of US 50 and SR 89, and other proposed Program activities. SEZs are under TRPA jurisdiction and include wetlands and other waters of the U.S. along with their drainage areas. As a result, there is overlap in jurisdiction between the USACE, the CDFG, and the TRPA. Therefore, areas of impacts to SEZs may include wetlands and other waters of the U.S. Total SEZ impacts are not expected to exceed 20 acres for the entire Program. This amount is based on construction of all Program segments, all basins, and all other design elements as currently proposed. However, as each segment is further developed and more location-specific data become available, avoidance and minimization measures for each project are expected to reduce the impacts significantly.

Proposed and Existing Basins

Proposed basins and retrofitting and/or enlarging of existing basins may impact SEZ areas. However, the exact impact area is unknown because the specific locations of new basins and the extents of modification to existing basins have not been determined. These impacts will be specifically identified in the environmental document for each segment based on more detailed designs.

Paving of Pullout Areas

SEZ areas could be impacted by the paving of the proposed pullouts. These impacts will be specifically identified in the environmental document for each segment based on more detailed designs.

Other Program Activities

Direct and indirect impacts to SEZs would be associated with widening shoulders along portions of the study area. Construction of asphalt-concrete dikes would convey stormwater runoff into the SEZs, causing potential indirect impacts including higher sedimentation rates and scouring. Any SEZ areas that are paved would be directly and permanently impacted. Although no areas have been specified for shoulder widening, SEZ losses could be high if shoulder widening is implemented throughout the study area. SEZ areas close to current shoulder locations occur along Grass Lake Creek, Taylor Creek, Tallac Creek, Emerald Bay, Meeks Bay, Upper Truckee River, Lake Valley State Recreation Area, and various unnamed perennial stream crossings throughout the study area. Temporary impacts to SEZs could include potential sedimentation and compaction of SEZs during construction activities, introduction and/or spread of weed seeds, and removal of mature SEZ vegetation. Other proposed construction activities would cause both direct/indirect and permanent/temporary impacts if they are located within or in close proximity to existing SEZs. However, most of the other proposed construction activities can be positioned outside of SEZ areas.

3.5.3.3 No Project Alternative

The No Project Alternative would consist of not implementing the EIP projects for which Caltrans is the lead agency; therefore, there would be no construction-related impacts to the natural environment.

3.5.4 Avoidance, Minimization, and Mitigation

Potential impacts to sensitive wildlife and plant species and sensitive habitats will be avoided and/or minimized through modification of construction specifications and timing of Program implementation. Mitigation and minimization measures are described below by category.

3.5.4.1 Avoidance Measure

Establish Environmentally Sensitive Areas

Additional direct and indirect impacts to sensitive biological resources (including wetlands, waters of the United States, SEZ resources, and sensitive habitats for rare plants) throughout the project area will be avoided or minimized by designating these features outside of the construction impact areas as environmentally sensitive areas (ESAs) in construction plans and specifications. Information related to the locations of ESAs and their treatment will be shown on contract plans and discussed in the Special Provisions. ESA provisions should include, but are not limited to, the use of temporary high-visibility orange fencing to delineate the proposed limit of work in areas adjacent to sensitive resources, and to delineate and exclude sensitive resources from potential construction impacts. Contractor encroachment into ESAs will be restricted (including the staging/operation of heavy equipment or casting of excavation materials). ESA provisions shall be implemented as a first order of work, and remain in place until all construction activities have been completed.

3.5.4.2 General Minimization and Mitigation Measures

Construction Clean-up

All temporary fill and construction debris will be removed from the project area after completion of construction activities.

Construction Scheduling

Construction will be timed to minimize potential impacts to sensitive biological resources as specified in Sections 3.5.4.3, 3.5.4.5, and 3.5.4.6. Construction work will be minimal during the fall, winter, and spring.

3.5.4.3 Minimization and Mitigation Measures for Impacts to Rare Plants

Preconstruction Surveys for Tahoe Yellow Cress

This species is the only California-listed endangered species in the project area. Since construction activities may result in effects to the shore zone where Tahoe yellow cress may occur, surveys for this species shall be conducted prior to final design. Prior to conducting surveys for Tahoe yellow cress, the Reno office of the USFWS shall be consulted for up-to-date information regarding known occurrences of the species in the project vicinity. The Reno office of the USFWS shall be consulted after Tahoe yellow cress surveys are complete to ensure that potential impacts are avoided or minimized and that construction activities do not inhibit long-term conservation efforts for the survival of the species.

Sensitive Plant Species Mitigation

Preservation, enhancement, and/or restoration of habitat will be conducted for any impacts to sensitive plant species and their associated habitats according to USFWS and CDFG requirements.

Plant Material Collection

Collection of seeds for annual plants or bulbs for transplanting will be conducted in coordination with the CDFG.

3.5.4.4 Weed Control Minimization and Mitigation Measures

Weed-Free Construction Equipment

All construction equipment working in or near SEZ areas must be steam cleaned of potential noxious weed sources (such as mud and vegetation) prior to mobilization at the project site (preferably before entry into the Lake Tahoe Basin) and maintained in clean and good working order with maintenance logs made available to TRPA at their request. This should also be performed after entering a potentially infested area and before moving on to another area, to help ensure that noxious weeds are not introduced into the construction area. The contractor shall employ whatever cleaning methods are necessary to ensure that equipment is free of noxious weeds, typically spraying equipment with a high-pressure water hose. Equipment shall be considered free of soil, seeds, and other such debris when a visual inspection does not disclose such material. Disassembly of equipment components or specialized inspection tools are not required. Equipment-washing stations shall be placed in areas that afford easy containment and monitoring (preferably outside of the Lake Tahoe Basin) and that do not drain into the forest or sensitive (riparian, SEZ, wetlands, etc.) areas.

Equipment Staging in Weed-Free Areas

Equipment should only be staged in weed-free areas. Landings should be placed in forested areas rather than open flats to help prevent the establishment of noxious invaders such as yellow star thistle, which use open, sunny areas.

Weed-Free Erosion Control Treatments

To further minimize the risk of introducing additional non-native species into the area, only locally TRPA-approved plant species will be used in any erosion control or revegetation seed mix or stock. No dry-farmed straw will be used, and certified weed-free straw shall be required where erosion control straw is to be used. In addition, any hydroseed mulch used for revegetation activities must also be certified weed-free.

3.5.4.5 Minimization and Mitigation Measures for Wildlife Impacts

Ensure Fish Passage

Work would comply with the USFWS Biological Opinion and all agency permits. Corrective action shall be taken immediately (when safe based on stream flows) if the culverts create a condition that obstructs fish passage, such as clogging by sediment and debris. Any intakes that

may be required for water pumps associated with wetting, irrigation, or dewatering of sites shall be screened to CDFG specifications to avoid fish kills.

Preconstruction Amphibian Surveys

A focused survey for mountain yellow-legged frogs shall be conducted by a qualified biologist within 30 days prior to the beginning of construction-related activities. In the unlikely event that mountain yellow-legged frogs are found, Caltrans will follow agreements with the USFWS as to the appropriate action.

Restrict Timing of Woody Vegetation Removal

It is recommended that the removal of any woody vegetation (trees and shrubs) required for the Program is completed between August 16 and October 15, prior to construction, outside of the predicted nesting season for raptors and migratory birds in this area. Vegetation removal outside of this time period may not proceed until a survey by a qualified biologist determines that no nests are present or in use, as described in the next measure (Nesting Bird Survey).

Nesting Bird Survey

If woody vegetation removal, construction, grading, or other Program-related improvements are scheduled during the nesting season of protected raptors and migratory birds (March 1 to August 15), a focused survey for active nests of such birds shall be conducted by a qualified biologist within 30 days prior to the beginning of construction-related activities. If active nests are found, Caltrans will follow agreements with the USFWS and the CDFG as to the appropriate action.

Limit Vegetation Removal

Vegetation removal shall be limited to the absolute minimum amount required for construction.

Preconstruction Surveys for Roosting, Denning, or Burrowing Mammals

A qualified biologist shall conduct focused preconstruction surveys within 30 days prior to the beginning of construction-related activities. In the unlikely event that a sensitive roosting, burrowing, or nesting mammal is found, Caltrans shall consult with the appropriate regulatory agency regarding actions needed to comply the various regulations before the work can be initiated. If a lapse in Program-related work of 30 days or longer occurs, a focused survey and, if required, consultation with the appropriate agency will be required before the work can be reinitiated.

3.5.4.6 Minimization and Mitigation Measures for Water Quality Impacts

Restrict Timing of In-Stream Activities

Culvert rehabilitation or extension is proposed at potential fish-bearing waters. To avoid direct impacts to fisheries resources, Caltrans would comply with the USFWS Biological Opinion and agency permits with regard to timing of in-stream activities. In most years, the seasonal dry period of these drainages occurs between July 15 and October 15; however, work within these drainages will be subject to stream conditions and permit restrictions.

Minimize Disturbance to Creek Channel and Adjacent Areas

Disruption of the streambed and adjacent riparian corridor will be minimized. All stream and riparian habitat areas outside of the construction impact areas will be designated as ESAs as detailed in Section 3.5.4.1.

Disturbed areas within the construction limits, including temporary or permanent access routes, will be graded to minimize surface erosion and siltation into streambeds. Any access routes will be removed after each construction season, and the streambed and bank will be re-contoured back to the general angle of repose that existed preconstruction. Streambanks and adjacent areas that are disturbed by construction activities will be stabilized to avoid increased erosion during subsequent storms and runoff. Bare areas will be covered with mulch and revegetated to preconstruction conditions. Construction site BMPs will be used to prevent contamination of the streambank and watercourse from construction material and debris as detailed in Section 3.5.4.6.

Containment Measures/Construction Site Best Management Practices

Measures will be employed to prevent any construction material or debris from entering surface waters or their channels. BMPs for erosion control will be implemented and in place prior to, during, and after construction to ensure that no silt or sediment enters surface waters.

Caltrans' Standard Specifications require the Contractor to submit a Water Pollution Control Plan. This plan must meet the standards and objectives to minimize water pollution impacts set forth in Section 7-1.01G of Caltrans' Standard Specifications. The Water Pollution Control Plan must also be in compliance with the goals and restrictions identified in the Lahontan RWQCB's Basin Plan. Any additional measures included in the RWQCB Section 401 certification, CDFG Section 1602 Agreement, CWA Section 404 permit, or TRPA permit will be complied with. Typical standards/objectives, at times referred to as BMPs, may include the following:

- Where working areas encroach on live or dry streams, lakes, or wetlands, physical barriers approved by TRPA and Lahontan RWQCB adequate to prevent the flow or discharge of sediment into these systems shall be constructed and maintained between working areas and streams, lakes, and wetlands. During construction of the barriers, discharge of sediment into streams shall be held to a minimum. Discharge will be contained through the use of measures approved by TRPA and Lahontan RWQCB that will keep sediment from entering protected waters.
- Oily or greasy substances originating from the Contractor's operations shall not be allowed to enter or be placed where they will later enter a live or dry stream, pond, or wetland.
- Asphalt concrete shall not be allowed to enter a live or dry stream, pond, or wetland.

Dewatering Activities

Depending on seasonal flows, dewatering of the streambed or culvert course and or a temporary stream diversion may be necessary where culvert rehabilitation or replacement is proposed. Any intakes that may be required for water pumps associated with wetting, irrigation, or dewatering of sites shall be screened to CDFG specifications to avoid the intake of fish. If dewatering of the site is deemed necessary, a temporary sediment-settling basin will be constructed downstream of the activity. All discharge waters associated with the dewatering activities will be pumped into the constructed basin before being allowed to re-enter drainages.

Restore Riparian and Stream Habitat Disturbed by Construction

Prior to vegetation removal, the area will be surveyed by a qualified biologist for a complete accounting of species and their quantities present within the construction limits. Upon completion of construction activities, streambanks will be permanently stabilized and the riparian areas will be replanted with appropriate native species. Tree and shrub species that will be used for the riparian restoration will include species such as aspen, willow, alder, and cottonwood. Stream channels will be regraded to preconstruction conditions. In addition, all temporary disturbance areas will be hydroseeded with the appropriate mix of native herbaceous and grass species unique to the specific Lake Tahoe vegetation type disturbed.

A restoration and monitoring plan will be prepared by the Caltrans Landscape Architecture Branch and will be submitted for approval by the appropriate agencies prior to Program permitting. The restoration plan will outline and detail all planting and erosion control activities and all associated proposed monitoring activities (including length and timing of monitoring, success criteria, remedial actions, and documentation).

Water Quality Fees or Excess Coverage Mitigation

Any new land coverage in the Lake Tahoe Basin is subject to TRPA regulation and may be assessed a water quality mitigation fee (for projects using "allowable" potential coverage; $1.34 per square foot) or may be required to perform Excess Coverage Mitigation (for projects utilizing "excess" coverage). Excess land coverage is defined as existing coverage beyond the total maximum allowable base coverage, the transferred coverage, and the coverage previously mitigated under the Program. The Excess Coverage Mitigation program offers five options to mitigate excess land coverage:

- Reduce coverage on-site
- Reduce coverage off-site
- Coverage mitigation fee used to retire land coverage within the same hydrologic zone
- Parcel consolidation or parcel line adjustment
- Projects within community plans (see TRPA Code of Ordinances Section 20-5)

Restore Disturbed SEZs

Mitigation shall be provided for direct impacts to SEZ areas according to TRPA policy.

Erosion Control

Temporary erosion control devices will be installed on slopes where erosion or sedimentation could degrade sensitive biological resources.

This section discusses cultural resources in the area of the proposed Program as well as potential impacts and mitigation measures. The following information is from the cultural resources technical reports prepared for the Program, *Archaeological Survey Report for the Lake Tahoe Basin Environmental Improvement Program* (Condor Country Consulting 2006) (ASR) and *Historical Resources Evaluation Report for the Lake Tahoe Basin Environmental Improvement Program* (JRP Historical Consulting 2006) (HRER).

3.6.1 Environmental Setting

The following summarizes the cultural resources setting of the Program vicinity. Ethnographic occupation of the area is associated with the Washoe Indian Tribe. Historic land uses along US 50 and SR 89 reflect patterns of development influenced by logging; tourism; and land management by local, state, and federal agencies.

3.6.1.1 Site History

Prehistory

Prehistoric archaeological sites have been documented within the Program regional area. Information obtained from sites in the South Lake Tahoe area show occupation from about 5,000 years ago to the 1900s. However, only a few sites in the project vicinity have actually been identified and studied, and researchers have had to rely primarily on lithic assemblages[6] to evaluate occupation and use of the area. Within the project area, existing sites have been identified during previous studies in the vicinity of some segments of SR 89.

Ethnography

The Washoe Indian Tribe of Nevada and California is the government of the present-day Native American people that occupy the study area. Prior to the Gold Rush, the Washoe occupied the entire study area as well as a large "nuclear area" surrounding Lake Tahoe from the crest of the Sierra Nevada Mountains eastward to the crest of the Pine Nut Mountains, the Pah Rah Range, and the Virginia Range. This nuclear territory extended from Honey Lake southward to the headwaters of the Mokelumne River. A larger area surrounding the nuclear area extended in all directions and was used by the ethnographic Washoe as a collection area for a wide variety of resources during the seasonal round. The extent of the peripheral area has been debated, but Price (1962, 1980) suggests that it was rather fluid through time and was not defended by the Washoe.

The Washoe culture revolved around a pattern of seasonal movement (shepherding) of livestock between mountain and lowland pastures (Downs 1966), and the Washoe people generally wintered in the lower-elevation Carson, Eagle, Antelope, and Long Valleys and in the Truckee Meadows. During the warmer months, the Washoe moved to the higher elevations around the Lake Tahoe Basin and over the Sierran crest to fish, hunt game, and gather valuable plant resources (Turner 1993:50). Some of the winter villages may have been year-round occupation

[6] Lithic materials are ground and chipped stone tools and the debris from making them. An assemblage is a collection of these materials found or recovered from a site or associated sites.

sites, at least for a portion of the population (Price 1962:40), and it is possible some groups may have overwintered along the shores of Lake Tahoe (Freed 1966). Whatever the exact seasonal ground was, it appears there were at least three and maybe four or five distinct subgroups of the Washoe.

Evidence for use of stone tools can also be found in the ethnographic record. The Washoe made a poison from rattlesnake venom, which was applied to arrowheads (Lowie 1939:325). Knives for various uses were also made from "various lithic materials" (d'Azevedo 1986:477), although information from modern Washoe informants for an investigation at the north end of Lake Tahoe indicates that basalt was not used as a source for tools (Bloomer et al. 1997:III-24). Only obsidian is viewed as a proper toolstone.

History

Nineteenth Century Immigration, Logging, and Agriculture

John C. Fremont and Charles Preuss are credited with the first sighting of Lake Tahoe by Euroamericans during their 1843–1844 congressionally sponsored expedition to California. However, American/European settlement did not occur at Lake Tahoe until after the discovery of gold in California in 1848. From the 1840s through the mid-1860s, the emigrant trails and roads between Placerville and Carson City and the wagon routes through Donner Pass to the north of the project area were critically important for the development of the region. When the Central Pacific Railroad completed its rail line over the Sierra Nevada from Sacramento to Reno in 1868, it lessened the importance of these early trails, roads, and wagon routes.

The California Gold Rush, which began in 1849 and continued through the 1850s, brought many hundreds of emigrants from the east over the Johnson Trail. Although most travelers sought to continue on to the California gold fields, a few established way stations in Lake Valley (now part of South Lake Tahoe), providing a place for travelers to rest and obtain supplies along the busy travel corridor that pioneers carved through the Lake Tahoe Basin.

The discovery of silver near Virginia City in the Nevada Territory in 1859, later known as the Comstock Lode, initiated a lumber boom in the Tahoe Basin that peaked in the 1870s and lasted into the 1880s. Timber was needed to shore up mine tunnels and for construction in the boomtowns of Virginia City, Gold Hill, and Silver City. During the 1860s, numerous lumber companies opened in the Lake Tahoe Basin, but by the mid-1870s, the Carson and Tahoe Lumber and Fluming Company controlled much of the logging around the Lake. Much of the southern and western shore and canyon timber was logged out by the mid-1880s.

From the 1850s to the 1870s, enterprising men harvested wild hay growing in the valleys and meadows around Lake Tahoe and sold it to way stations as forage for the draft animals pulling wagons over the mountains into California, and later, ascending the Sierra Nevada eastward to the Comstock Mines. Several hay harvesters operated along the southern and western margins of Lake Tahoe. Lake Valley became Lake Tahoe's hay production center during the 1870s.

Beginning in the 1860s, foothill and valley cattlemen seasonally drove their livestock to higher elevations to pasture in the cooler mountain valleys west and south of Lake Tahoe. Early landowners in the southern Lake Tahoe area established dairy operations and by the early 1870s, a thriving summer dairy industry was established, supplying dairy products to the Comstock miners and early Lake Tahoe communities. The acquisition of land for 19th century timber and

dairy operations had long-reaching effects on land development around the Lake, which is reflected in the pattern of ownership and land use within the study area.

Early Tourism and Resort Development

Lake Tahoe was a vacation/recreation destination as early as the 1860s. Resort development increased throughout the late 19th century as urban populations became aware of the Lake's many attributes. As early as 1864, Lake Tahoe resort owners were publicizing their establishments in San Francisco, Sacramento, and Virginia City newspapers, advertising Lake Tahoe as a superior destination and comparable to Santa Cruz or Calistoga, other popular California vacation spots during the period. Early in the next century, clientele of more modest means could access the lake via the automobile, thus encouraging the growth of facilities with simpler accommodations.

Tourism and Development, 1900 to World War II

The California State Legislature designated the old Placerville Road as a state highway, called the Lake Tahoe Wagon Road, in 1895. The highway's route from Placerville followed the old Johnson Trail and the Kingsbury-McDonald Road (roughly along the present-day Pioneer Trail) to the Nevada state line. The state's new highway department began work to improve the road around 1900, making it mostly passable by motor vehicles during the summer. The legislature designated other state highways in the southern area of Lake Tahoe starting approximately in 1910. Federal funding for highways at Lake Tahoe was secured during the 1910s and 1920s, in part through the Forest Service and in part through the federal government's designation of the Lake Tahoe Wagon Road as part of US 50 in 1924.

Year-round motor vehicle access to and around Lake Tahoe and expansion of the roadway network around the Lake did not occur until the 1930s. In the meantime, some of the large resort hotels that had catered to a wealthy clientele were forced to close or modify their properties in response to the growing number of auto travelers and popularity of new forms of travel accommodations and roadside services. Lake Tahoe and other resort areas in California were at the forefront of the growing auto-vacation industry catering to middle-income families. The auto camps and cabin resort facilities evolved into cottages and motels that became popular in the mid-20th century.

Auto access to Lake Tahoe also contributed to the development of vacation homes and rental properties. The construction of modest summer vacation cottages and cabins at the Lake began to increase in the 1920s and 1930s. This trend expanded greatly after World War II due to improved highway access to the Lake. The following vacation properties opened during this period:

- Meeks Bay Resort (1921) offered tent camping with cabins and associated buildings.
- Meadow Park Resort (circa 1921) was originally a silver fox farm. Lodging consisted of cabins with associated buildings and an entertainment area.
- Camp Richardson (1923) serves as the best remaining example of Lake Tahoe's evolution into a popular, family-style resort area. Lodging consisted of several cabins and a tent camping area with associated buildings and facilities.

- Multiple summer home construction developments included the Meeks Bay Vista subdivision, the personal summer cabins for the Murphy and Morgan families, and numerous modest summer cabins in the Al Tahoe and Bijou areas.
- Bayview Resort and Campground (circa late 1920s/early 1930s) offered lodging and cabins and had a gas station and general store. It was destroyed in the mid-1960s and has not been rebuilt. A small campground—Bay View Campground—is located immediately south of the original site.
- D.L. Bliss State Park (1930s) was private land until 66 ha (162 acres) were acquired for establishment as a state park. The park offered camping facilities with associated features and buildings.

Tourism and Development After World War II

Following World War II and into the 1960s, a general nationwide prosperity led to an upsurge of recreational development at Lake Tahoe. Tourism was boosted by planned summer events including rodeos and speedboat races, and lakeside summer resorts thrived. Gambling and casino development in the South Lake Tahoe area provided tremendous impetus for development in the post–World War II years, and cabin resorts and motels were built to accommodate the visitors. Land values escalated and contributed to the division of many large, family-owned tracts, and former summer-season communities in the southern portions of the Lake expanded into year-round communities. Through the 1940s, El Dorado County approved plans for several mixed-use and residential subdivisions for the South Lake Tahoe area and along the Lake's western shore. Subdivisions developed through the 1950s to meet continuing demand. Beginning in the 1960s, more restricted land use controls came into effect within the region, although there continues to be a high demand to live in and visit the Tahoe Basin, with associated development pressures.

3.6.1.2 Records Search and Field Survey

Study areas were defined for the Program for both archaeological and historical resource inventory and evaluation. The archaeological study area was defined to extend outside of the existing right-of-way along both US 50 and SR 89 for the purpose of allowing flexibility in designing the locations and areas for proposed water quality and roadway improvements within each project segment. The historic resource study area generally conformed to the archaeological resources study area except in locations where the boundary cut across existing parcels. Where this occurred in urbanized areas (lot sizes less than about 0.4 ha [1 acre]), the study area was expanded to include the entire parcel. Some large parcels outside of the urbanized areas were included in the historic resource study area if the Program had a potential to affect historic resources. The historic resource study area was not expanded within large rural, State Park, or Forest Service land parcels where there was no potential to affect historic resources.

Records Search

Several sources were consulted in preparation of the archaeological inventory:

- Caltrans District 3 Office (NCIC Record Search ELD-99-59) – PSRs for US 50 and SR 89 (Caltrans 2003c, 2003d) delineated the archaeological study area and depicted potential locations for proposed detention basins. Caltrans also provided files related to the Program

including a complete records search for the five SR 89 segments (KP 0.0 to 44.1 [PM 0.0 to 27.4]).

- North Central Information Center (NCIC) at California State University, Sacramento, Record Search ELD-05-151 – A records search was performed for each of the three US 50 project segments (#ELD-05-151). The search included a review of all recorded archaeological sites, historic structures, and other known cultural resources within the Program study area and the surrounding 0.8-km (0.5-mile) radius, as well as a review of reports for all known cultural resources studies conducted within the 0.8-km (0.5-mile) search radius.
- LTBMU Supervisor's Office – An in-person record search was conducted with the archaeological records housed at the LTBMU in South Lake Tahoe. This search included a review of all recorded archaeological sites, historic structures, and other known cultural resources within the Program study area and the surrounding 0.8-km (0.5-mile) radius, as well as a review of reports for all known cultural resources studies conducted within the 0.8-km (0.5-mile) search radius.
- California State Parks – Sierra District State Parks Office – An in-person record search was also performed with the archaeological records housed at the Sierra District State Parks Office in Tahoma. This search included a review of all recorded archaeological sites, historic structures, and other known cultural resources on State Parks lands within the Program study area and the surrounding 0.8-km (0.5-mile) radius, as well as a review of reports for all known cultural resources studies conducted within the 0.8-km (0.5-mile) search radius.

Standard sources of information that list or cite known or potential historic properties and historical resources were also reviewed. These sources included the National Register of Historic Places (NRHP), the Office of Historic Preservation Determinations of Eligibility for the NRHP, the California Inventory of Historic Resources, the California Historical Landmarks, and the California Points of Historical Interest. Previous studies conducted in and around the study area were obtained and reviewed.

Background research for historical resources was also conducted at the following locations:

- California State Library in Sacramento
- Caltrans Transportation Library in Sacramento
- Shield Library at the University of California, Davis
- El Dorado County Offices in South Lake Tahoe
- South Lake Tahoe Historical Society Museum in South Lake Tahoe
- North Lake Tahoe Historical Society in Tahoe City
- El Dorado County Public Library – South Lake Tahoe Branch
- Lake Tahoe Community College Library

Field Surveys

The field survey for archaeological resources was conducted during several visits in September and October 2005 and September 2006. The survey for historic properties was performed during various periods between September 2005 and May 2006.

Native American Consultation

A letter was sent to the Native American Heritage Commission (NAHC) on February 6, 2006, requesting a search of the Sacred Lands File. A records search of the Sacred Lands File was conducted on February 8, 2006. According to the NAHC, there are no Sacred Lands within the immediate project area. The NAHC provided a list of seven Native American individuals and organizations that might have information pertinent to the Program or concerns regarding the proposed Program activities. Letters and maps were sent to the NAHC-identified individuals on February 24, 2006. Copies of the letters, maps, and telephone conversations are included in the ASR.

3.6.1.3 Identified Resources

Background research identified 44 previously recorded cultural resources within the study area. Additional archaeological and historic sites, features, and structures were identified as a result of Program-related research and surveys. Resources that will be impacted by proposed project activities are discussed in Section 3.6.3 and are categorized as to their eligibility for inclusion in the NRHP.

3.6.2 Regulatory Setting

3.6.2.1 State

In considering impact significance under CEQA, the significance of the resource is determined first. At the state level, consideration of significance is measured by cultural resource provisions considered under CEQA Sections 15064.5 and 15126.4 and the draft criteria regarding resource eligibility to the California Register of Historical Resources (CRHR). The eligibility criteria for the CRHR are very similar to those that qualify a property to the NRHP. Essentially, a property that is eligible for the NRHP is also eligible for the CRHR.

Generally, under CEQA, a historical resource (including built-environment historic and prehistoric archaeological resources) is considered significant if it meets the criteria for listing on the CRHR. Resources meeting these criteria may also be referred to as being "potentially eligible" for listing the CRHR. These criteria are set forth in CEQA Section 15064.5 and defined as any resource that:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage
- Is associated with lives of persons important in our past
- Embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values
- Has yielded, or may be likely to yield, information important in prehistory or history

The determination of eligibility must be based on the above. For example, for the last criterion, the judgment on eligibility hinges on the nature of intact archaeological deposits or features in a particular resource and the ability of those deposits or features to contain information that is useful for answering scientifically valid research questions. A historic structure or site must meet at least one of the criteria and retain enough historic character or appearance to be recognizable as a historic resource and convey the reasons for its significance, and/or retain the potential to yield significant scientific, historic information or specific data.

Section 15064.5 of CEQA also assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. These procedures are detailed under California Public Resources Code Section 5097.98.

Impacts to "unique archaeological resources" and "unique paleontological resources" are also considered under CEQA, as described under California Public Resources Code Section 21083.2. A unique archaeological resource implies an archaeological artifact, object, or site about which it can be clearly demonstrated that – without merely adding to the current body of knowledge – there is a high probability that it meets one of the following criteria:

- The archaeological artifact, object, or site contains information needed to answer important scientific questions, and there is a demonstrable public interest in that information
- The archaeological artifact, object, or site has a special and particular quality, such as being the oldest of its type or the best available example of its type
- The archaeological artifact, object, or site is directly associated with a scientifically recognized important prehistoric or historic event or person

A non-unique archaeological resource indicates an archaeological artifact, object, or site that does not meet the above criteria. Impacts to non-unique archaeological resources and resources that do not qualify for listing on the CRHR receive no further consideration under CEQA.

Under CEQA Section 15064.5, a project would potentially have significant impacts if it would cause substantial adverse change in the significance of one of the following:

- A historical resource (i.e., a cultural resource eligible for the CRHR)
- An archaeological resource (defined as a unique archaeological resource that meets CRHR criteria as listed in Section 21083.2)
- A unique paleontological resource or unique geologic feature (i.e., where the project would directly or indirectly destroy a site)
- Human remains (i.e., where the project would disturb or destroy burials)

A non-unique resource is given no further consideration other than the simple recording of its existence by the CEQA lead agency.

Potentially substantial changes (impacts) in the significance of a historic resource (e.g., archaeological site or historic structure) may involve demolition, destruction, relocation or alteration of the resource or its immediate surroundings such that the resource is materially impaired with regard to the attributes that make it significant (CEQA Section 15064.5[b]). No mitigation measures are required unless there is a potential for an impact to a significant or potentially significant resource, or previously undiscovered cultural resources are detected

during construction. Mitigation under CEQA must address impacts to the values for which a cultural resource is considered important. To mitigate adequately, it must therefore be determined what elements make a site eligible for the CRHR. The preferred treatment is complete avoidance, when feasible, of all cultural resources.

Significance Criteria

Potentially applicable CEQA significance criteria for the Program include the following.

- Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Section 15064.5
- Cause a substantial adverse change in the significance of an archaeological resource as defined in CEQA Section 15064.5
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature
- Disturb any human remains, including those interred outside of formal cemeteries

Section 15064.5 of the CEQA Guidelines further defines criteria for determining the significance of impacts on archaeological and historic resources. Section 15064.5 provides that, in general, a resource not listed on state or local registers of historical resources shall be considered by an agency to be historically significant if the resource meets the criteria for listing on the CRHR. Section 15064.5 also provides standards for determining what constitutes a "substantial adverse change" that must be considered a significant impact on an historic resource. The section further states that its provisions apply to those archaeological resources that also qualify as historic resources.

3.6.2.2 Regional

TRPA Thresholds

Although the TRPA does not include specific thresholds for archaeological resources, the TRPA Code of Ordinances includes provisions that offer procedures for the identification, evaluation, and protection of cultural resources, including sites of archaeological and historic significance. A potential loss of archaeological or historic resources would result in a significant impact on cultural resources. The TRPA Initial Environmental Checklist identifies issues that may be considered significant pursuant to the Code of Ordinances. These questions include:

- Will the proposal result in an alteration of or adverse physical or aesthetic effect to a significant archaeological or historical site, structure, object or building?
- Is the proposed project located on a property with any known cultural, historical, and/or archaeological resources, including resources on TRPA or other regulatory official maps or records?
- Is the property associated with any historically significant events and/or sites or persons?
- Does the proposal have the potential to cause a physical change which would affect unique ethnic cultural values?

- Will the proposal restrict historic or prehistoric religious or sacred uses within the potential impact area?

3.6.3 Impacts

3.6.3.1 CEQA and TRPA Considerations

Table 3.6-1 summarizes the 16 NRHP-listed and NRHP-eligible properties (archaeological and historic), for which significance has already been determined, that would be affected by proposed Program activities.[7] The table lists the status of each property and indicates in the Project Component column whether the site is only within the overall the study area (but is *not* overlapped by any project feature, such as a proposed drainage basin), or if it could be potentially affected by the preliminary locations of the various components of the Program in the future.

Table 3.6-1
Potentially Affected Cultural Resources/Historic Properties Within the Study Area (Previously Evaluated)

Property Identifier	Property Name	Location	NRHP Status	Project Component
USFS 05-19-0786	Old Alpine State Highway, Segment 1	SR 89 Segment 1	Determined Eligible	Proposed Basin
CA-ELD-2413H, USFS 05-19-786	Old Alpine Highway, Segment 9	SR 89 Segment 1	Determined Eligible	Within Study Area Only
USFS 05-19-0777	Abandoned Road Segment	SR 89, Segment 1	Determined Eligible	Within Study Area Only
CA-ELD-0179	Washoe Trail Site	SR 89 Segment 2	Determined Eligible	Within Study Area Only
CA-ELD-0180H	Taylor Creek Site	SR 89 Segment 2	Determined Eligible	Within Study Area Only
USFS 05-19-0045	Pope or Tevis Estate / FS 05-03-54-45	SR 89 Segment 2	NRHP-listed	Within Study Area Only
USFS 05-19-0043	Camp Richardson Resort	SR 89 Segment 2	Determined Eligible	Proposed Basin
USFS 05-19-0044	Valhalla Estate	SR 89 Segment 2	NRHP-listed	Within Study Area Only
USFS 05-19-0047	Tallac Historic Site (Baldwin, Pope and Heller Estates)	SR 89 Segment 2	NRHP-listed	Within Study Area Only
USFS 05-19-0417	Fallen Leaf Dam water & electrical transmission	SR 89 Segment 2	Determined Eligible	Within Study Area Only
USFS 05-19-0795	Visitor Center Site	SR 89 Segment 2	Determined Eligible	Within Study Area Only
-	SR 89 Masonry Features at Emerald Bay – Masonry Features 1-4	SR 89, Segment 3	Listed	Within the Study Area Only

[7] Properties listed in or determined eligible for listing in the NRHP are automatically listed in the CRHR and considered historic resources under CEQA.

Table 3.6-1 (Concluded)
Potentially Affected Cultural Resources/Historic Properties Within the Study Area (Previously Evaluated)

Property Identifier	Property Name	Location	NRHP Status	Project Component
-	Vikingsholm Estate	SR 89 Segment 3	NRHP-listed	Within Study Area Only
-	D.L. Bliss State Park Custodian's Cottage	SR 89 Segment 4	Determined Eligible	Within Study Area Only
-	Sugar Pine Point State Park	SR 89 Segment 5	NRHP-listed	Within Study Area Only
-	Murphy Family Summer Cabins Historic District	SR 89 Segment 5	Determined Eligible	Within Study Area Only

Table 3.6-2 identifies the 48 resources that will need additional research in the future, should proposed Program activities affect the resources themselves. As with Table 3.6-1, the Project Component column indicates whether the resource was only identified within the Program study area or if it could also be affected by the preliminary locations of proposed project features. If the Program could potentially affect one of the resources listed in Table 3.6-2, the eligibility of the resource for inclusion in the NRHP and/or CRHR will need to be determined.

Table 3.6-2
Potentially Affected Cultural Resources/Historic Properties Within the Study Area (Not Previously Evaluated)

Property Identifier	Property Name	Location	Project Component
CA-ELD-2208 / P-09-003398	BRM 1	US 50 Segment 1	Within Study Area Only
P-09-003394	Foundation Site 2	US 50 Segment 1	Within Study Area Only
USFS 05-19-0481	Lake Valley Utility (or Telephone) Line	US 50 Segment 1 & SR 89, Segment 2	Within Study Area Only & Proposed Basin
CA-ELD-2206H	Foundation Site 1	US 50 Segment 2	Proposed Basin
USFS 05-19-0021	Lakeside House / Stateline Hotel Site	US 50 Segment 3	Within Study Area Only
CA-ELD-0070H / P-09-00158H / USFS 05-19-0118	"*Dabayé po'ewe*" Lithic scatters	SR 89 Segment 1	Proposed Basin
CA-ELD-2414H / P-09-003691 / USFS 05-19-1131	Temp Site Aspen 4	SR 89 Segment 1	Proposed Basin
CA-ELD-2415H / P-09-003693 / USFS 05-19-1128	Temp Site Aspen 1 (formerly Isolate 98-1 / Aspen Grove 2 and Isolate 98-2 / Aspen Grove 3)	SR 89, Segment 1	Within Study Area Only

Table 3.6-2 (Continued)
Potentially Affected Cultural Resources/Historic Properties Within the Study Area (Not Previously Evaluated)

Property Identifier	Property Name	Location	Project Component
CA-ELD-2416H / P-09-003694 / USFS 05-19-1129	Temp Site Aspen 2	SR 89, Segment 1	Proposed Basin
CA-ELD-2417H / P-09-003695 / USFS 05-19-1130	Temp Site Aspen 3	SR 89, Segment 1	Proposed Basin
USFS 05-19-0909	Aspen Grove	SR 89 Segment 1	Within Study Area Only
USGS 05-19-0132	TRT 1A Aspens	SR 89, Segment1	Within Study Area Only
USFS 05-19-0423	Ethnographic site "*Tsee Gah Bah*"	SR 89 Segment 1	Proposed Basin
USFS 05-19-0426	LESS	SR 89 Segment 1	Within Study Area Only
USFS 05-19-1015	Highway 89 Spring Site	SR 89 Segment 1	Proposed Basin
USFS 05-19-1020	Santa Claus Site	SR 89 Segment 1	Within Study Area Only
CA-ELD-0029 / P-09-000177 / USFS 05-19-0114	One site composed of two sites; CA-ELD-179 &-180 (not shown on maps as two)	SR 89, Segment 2	Within Study Area Only
CA-ELD-0183 / P-09-000271 / USFS 05-19-0071	Basalt Flakes	SR 89, Segment2	Within Study Area Only
USFS 05-19-0007	Permanent Washoe Camp Site (05-03-54-007)	SR 89 Segment 2	Within Study Area Only
USFS 05-19-0111	Tallac Ditch	SR 89 Segment 2	Within Study Area Only
USFS 05-19-0456	Rich Ditch	SR 89 Segment 2	Within Study Area Only
-	73x (no record at NCIC, shown only on maps)	SR 89 Segment 2	Within Study Area Only
CA-ELD-2209	Lithic Scatter 1	SR 89 Segment 3	Proposed Basin
-	Bayview Resort & Campground	SR 89, Segment 3	Proposed Basin
P-09-003401	Historic SR 89, Segment 1	SR 89 Segment 4	Proposed Basin
P-09-003401	Historic SR 89, Segment 2	SR 89 Segment 4	Proposed Basin
P-09-003401	Historic SR 89, Segment 3	SR 89 Segment 4	Proposed Basin
P-09-003401	Historic SR 89, Segment 4	SR 89 Segment 4	Within Study Area Only
P-09-003401	Historic SR 89, Segment 5	SR 89 Segment 4	Proposed Basin
P-09-003401	Historic SR 89, Segment 6	SR 89 Segment 4	Proposed Basin
P-09-003401	Historic SR 89, Segment 7	SR 89 Segment 4	Within Study Area Only
P-09-003401	Historic SR 89, Segment 8	SR 89 Segment 4	Within Study Area Only

Table 3.6-2 (Concluded)
Potentially Affected Cultural Resources/Historic Properties Within the Study Area (Not Previously Evaluated)

Property Identifier	Property Name	Location	Project Component
P-09-003408	Road 1	SR 89 Segment 4	Proposed Basin
P-09-003409	Road 2	SR 89 Segment 4	Proposed Basin
P-09-003410	Road 3	SR 89 Segment 4	Proposed Basin
P-09-003411	Road 4	SR 89 Segment 4	Proposed Basin
P-09-003412	Road 5	SR 89 Segment 4	Within Study Area Only
P-09-003413	Road 6	SR 89 Segment 4	Within Study Area Only
P-09-003414	Road 7	SR 89 Segment 4	Proposed Basin
P-09-003415	Ditch 1	SR 89 Segment 4	Proposed Basin
P-09-003416	Telegraph Line	SR 89 Segment 4	Proposed Basin
-	Bliss Rock Wall / Green THP-Site 7	SR 89 Segment 5	Within Study Area Only
-	Erhman Ditch	SR 89 Segment 5	Within Study Area Only
-	State Park Linear Feature 9	SR 89 Segment 5	Proposed Basin
-	State Park Linear Feature 10	SR 89 Segment 5	Proposed Basin
-	State Park Linear Feature 11	SR 89 Segment 5	Proposed Basin
-	State Park Site A8	SR 89 Segment 5	Proposed Basin
-	Yellow Jacket Dump Site	SR 89 Segment 5	Within Study Area Only

3.6.3.2 No Project Alternative

The No Project Alternative would consist of not implementing the EIP projects for which Caltrans is the lead agency; therefore, there would be no impacts to archaeological or historic resources.

3.6.4 Avoidance, Minimization, and Mitigation

Locations of Program facilities such as drainage basins and roadway pullouts have been conceptually identified but may change as detailed project design is carried out. Mitigation will ultimately need to be defined for each resource affected. The following defines categories of mitigation measures that could be applied as each project segment advances to design.

Three classes of resources could potentially be affected by Program activities:

- Built-environment resources (buildings, structures, and other aboveground built features)
- Archaeological sites (prehistoric, historic, or mixed component)

- Traditional cultural properties (traditional use areas such as plant gathering areas that still retain significance for living populations)

The following kinds of activities could potentially affect these resource classes:

- Ground-disturbing activity caused by construction, maintenance, or stormwater runoff erosion
- Vandalism and/or looting of archaeological or built-environment resources as a result of increased use and/or access

Typical avoidance, minimization, and mitigation measures in addition to project BMPs may include the following:

- Before any specific proposed undertaking that would have the potential to affect cultural resources, the information presented in this section and in the ASR and HRER will be reviewed against the specific area of potential effect for the undertaking. Parcels that were inaccessible for the archaeological resources study may require access and survey. This effort would take place in conjunction with consultation with members of the local Native American community and consultation with other interested members of the public as appropriate.
- In the event that a significant cultural resource (as defined by the NRHP and CRHR criteria) is identified and has the potential to be adversely affected, measures will be taken to avoid the resource. In the event the resource cannot be avoided, it will be subject to data recovery, further study, enhanced recordation, interpretation, physical protection, or some combination of these measures to reduce impacts to a less-than-significant level.
- In the future, if previously disturbed cultural materials are unearthed during the course of construction for any Program-related facilities, it is Caltrans' policy that work be halted in that area until a professionally qualified archaeologist can assess the significance of the find. Additional archaeological survey will be needed if the project limits are extended beyond the present survey limits. If human remains are encountered during the course of construction, all work in that area must halt and the El Dorado County Coroner must be contacted, pursuant to California Public Resources Code Sections 5097.94, 5097.98, and 5097.99.

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This section presents the fundamentals of environmental noise, discusses policies and standards applicable to the proposed Program, and provides an evaluation of the potential significance of impacts resulting from Program construction.

3.7.1 Environmental Setting

3.7.1.1 Fundamentals of Noise

Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB), with 0 dB corresponding roughly to the threshold of hearing. Decibels and other technical terms are defined in Table 3.7-1.

Most of the sounds that we hear in the environment do not consist of a single frequency but rather a broad band of frequencies, with each frequency differing in sound level. The intensities of each frequency add together to generate a sound. The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies of a sound in accordance with a weighting that reflects the facts that human hearing is less sensitive at low frequencies and extreme high frequencies than in the frequency mid-range. This is called "A" weighting, and the decibel level so measured is called the A-weighted sound level (dBA). In practice, the level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve. Typical A-weighted levels measured in the environment and in industry are shown in Table 3.7-2 for different types of noise.

Although the A-weighted noise level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of noise from distant sources that create a relatively steady background noise in which no particular source is identifiable. To describe the time-varying character of environmental noise, the statistical noise descriptors, L_{01}, L_{10}, L_{50}, and L_{90}, are commonly used. They are the A-weighted noise levels equaled or exceeded during 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period. A single number descriptor called the L_{eq} is also widely used. The L_{eq} is the average A-weighted noise level during a stated period of time.

3.7.1.2 Existing Noise Environment

The existing noise environment along US 50 and SR 89 results primarily from vehicular traffic. Typical daytime noise levels along segments of the highway were estimated based on Caltrans traffic volume data (Caltrans 2005a) and are presented in Table 3.7-3.

Table 3.7-1
Definitions of Acoustical Terms

Term	Definitions
Decibel (dB)	A unit describing the amplitude of sound equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sounds are below 20 Hz and ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level (dBA)	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear, and correlates well with subjective reactions to noise.
Equivalent Noise Level (L_{eq})	The average A-weighted noise level during the measurement period.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1 percent, 10 percent, 50 percent, and 90 percent of the time during the measurement period.
Day/Night Noise Level (L_{dn} or DNL)	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 p.m. and 7:00 a.m.
Community Noise Equivalent Level (CNEL)	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 p.m. to 10:00 p.m., and after addition of 10 decibels to sound levels measured in the night between 10:00 p.m. and 7:00 a.m.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	Noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content, as well as the prevailing ambient noise level.

Table 3.7-2
Typical Noise Levels in the Environment

Common Outdoor Noise Source	Noise Level (dBA)	Common Indoor Noise Source
	120 dBA	
Jet flyover at 300 meters		Rock concert
	110 dBA	
Pile driver at 20 meters	100 dBA	
		Night club with live music
	90 dBA	
Large truck pass by at 15 meters		
	80 dBA	Noisy restaurant
		Garbage disposal at 1 meter
Gas lawn mower at 30 meters	70 dBA	Vacuum cleaner at 3 meters
Commercial/Urban area daytime		Normal speech at 1 meter
Suburban expressway at 90 meters	60 dBA	
Suburban daytime		Active office environment
	50 dBA	
Urban area nighttime		Quiet office environment
	40 dBA	
Suburban nighttime		
Quiet rural areas	30 dBA	Library
		Quiet bedroom at night
Wilderness area	20 dBA	
Most quiet remote areas	10 dBA	Quiet recording studio
Threshold of human hearing	0 dBA	Threshold of human hearing

Table 3.7-3
Typical Daytime Noise Levels Estimated from Average Daily Traffic

Segment	Segment Description	Typical Daytime Noise Levels at 30.5 Meters (100 Feet) from Roadway Center
US 50 Segment 1	Meyers Road to 0.1 km east of Incline Road	66 dBA L_{eq}
US 50 Segment 2	Airport Road to the US 50/SR 89 "Y" Intersection	66 to 68 dBA L_{eq}
US 50 Segment 3	Ski Run Blvd. to the Nevada State Line	67 dBA
SR 89 Segment 1	Alpine County Line to the US 50/SR 89 Intersection at Meyers	61 to 62 dBA
SR 89 Segment 2	US 50/SR 89 "Y" in South Lake Tahoe to Cascade Rd.	67 dBA
SR 89 Segment 3	Cascade Road to north of the Eagle Falls Sidehill Viaducts	61 dBA
SR 89 Segment 4	North of the Eagle Falls Sidehill Viaducts to Meeks Creek	61 dBA
SR 89 Segment 5	Meeks Creek to the Placer County Line	61 dBA

3.7.2 Regulatory Setting

3.7.2.1 Federal and State (Caltrans)

Caltrans applies noise criteria contained in the *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects* (Caltrans 2006a) to projects involving federal and state sponsorship. This protocol requires noise assessment and abatement evaluation for "Type I" projects, which are defined in 23 Code of Federal Regulations (CFR) 772 and are primarily actions that add lanes to an existing highway or significantly change a highway's alignment. None of the improvements proposed for the EIP (listed in Section 2.1) would meet this definition. Therefore, even if federal funding or other actions would apply to any future EIP projects, they do not appear to be Type I projects and would not require evaluation, based on the definition of the EIP project activities included in this EIR.

CEQA Significance Criteria

Applicable significance criteria under CEQA for the Program include the following:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. A substantial temporary or periodic increase in ambient noise levels is considered a sustained increase of at least 5 dBA at one location during the seasonal construction period.

3.7.2.2 Regional

Tahoe Regional Planning Agency

The TRPA establishes noise limitations in Chapter 23 of the Code of Ordinances. These limitations are applicable to single-event noises from aircraft, marine crafts, motor vehicles, motorcycles, off-road vehicles, and snowmobiles. The limitations also apply to community noise levels in the Tahoe Region. TRPA-approved construction is specifically exempted from these provisions, provided that construction activities are limited to the hours of 8:00 a.m. to 6:30 p.m.

TRPA Thresholds

The environmental carrying capacities, or thresholds, for noise consist of numerical Community Noise Equivalent Level (CNEL) values for various land use categories and transportation corridors and single-event (L_{max}) standards for specific sources including motor vehicles, off-road vehicles, boats, snowmobiles, and aircraft. The three noise threshold indicators under TRPA are as follows:

- N-1 – Single-event noise standards for aircraft: Aircraft noise measured in decibels monitored pursuant to the monitoring element of the Lake Tahoe Airport Master Plan.
- N-2 – Single-event noise standards for other than aircraft: Any single-event noise measurement made with a Type I sound level meter using the A-weighting and "slow" response pursuant to applicable manufacturer's instructions, except that for sounds of a duration of 2 seconds or less, the "fast" response shall be used. See Chapter 23 of the Code of Ordinances.
- N-3 – Community Noise Equivalent Levels (CNELs): CNELs calculated pursuant to the Code of Ordinances, Section 23.4. The TRPA shall review proposed activities in the Region taking into account site-specific analyses, estimated impacts on affected land uses, consistency with other provisions of the Regional Plan, and reasonable tests of significance of change in noise levels.

El Dorado County General Plan

Maximum allowable noise levels resulting from construction are outlined in El Dorado County's General Plan (El Dorado County 2004). Noise level standards outlined in Tables 6-3 and 6-4 of the El Dorado County Construction Noise Standards (see Figure 3.7-1) would apply to the Program. The standards presented in Table 6-5 (see Figure 3.7-1) would not apply because construction activities would occur along existing state highways, which are not rural.

Policy 6.5.1.11 The standards outlined in Tables 6-3, 6-4, and 6-5 (Figure 3.7-1) shall apply to those activities associated with actual construction of a project as long as such construction occurs between the hours of 7 a.m. and 7 p.m., Monday through Friday, and 8 a.m. and 5 p.m. on weekends, and on federally recognized holidays. Exemptions are allowed if it can be shown that construction beyond these times is necessary to alleviate traffic congestion and safety hazards.

3.7.3 Impacts

3.7.3.1 CEQA Considerations

Construction Activities

Construction activities associated with the proposed Program are described in Section 2.1. Construction would generate noise and would temporarily increase noise levels at adjacent land uses. Construction-related noise levels are normally highest during the demolition and earthwork phases of construction because of heavy equipment and impact tools required to complete the work. These phases of construction normally generate the highest noise levels over extended periods of time.

Figure 3.7-1 El Dorado County Construction Noise Standards

TABLE 6-3
MAXIMUM ALLOWABLE NOISE EXPOSURE FOR NONTRANSPORTATION NOISE SOURCES IN COMMUNITY REGIONS AND ADOPTED PLAN AREAS–CONSTRUCTION NOISE

Land Use Designation[1]	Time Period	Noise Level (dB)	
		L_{eq}	L_{max}
Higher-Density Residential (MFR, HDR, MDR)	7 am–7 pm	55	75
	7 pm–10 pm	50	65
	10 pm–7 am	45	60
Commercial and Public Facilities (C, R&D, PF)	7 am–7 pm	70	90
	7 pm–7 am	65	75
Industrial (I)	Any Time	80	90

Note:
[1] Adopted Plan areas should refer to those land use designations that most closely correspond to the similar General Plan land use designations for similar development.

TABLE 6-4
MAXIMUM ALLOWABLE NOISE EXPOSURE FOR NONTRANSPORTATION NOISE SOURCES IN RURAL CENTERS–CONSTRUCTION NOISE

Land Use Designation	Time Period	Noise Level (dB)	
		L_{eq}	L_{max}
All Residential (MFR, HDR, MDR)	7 am–7 pm	55	75
	7 pm–10 pm	50	65
	10 pm–7 am	40	55
Commercial, Recreation, and Public Facilities (C, TR, PF)	7 am–7 pm	65	75
	7 pm–7 am	60	70
Industrial (I)	Any Time	70	80
Open Space (OS)	7 am–7 pm	55	75
	7 pm–7 am	50	65

TABLE 6-5
MAXIMUM ALLOWABLE NOISE EXPOSURE FOR NONTRANSPORTATION NOISE SOURCES IN RURAL REGIONS–CONSTRUCTION NOISE

Land Use Designation	Time Period	Noise Level (dB)	
		L_{eq}	L_{max}
All Residential (LDR)	7 am–7 pm	50	60
	7 pm–10 pm	45	55
	10 pm–7 am	40	50
Commercial, Recreation, and Public Facilities (C, TR, PF)	7 am–7 pm	65	75
	7 pm–7 am	60	70
Rural Land, Natural Resources, Open Space, and Agricultural Lands (RR, NR, OS, AL)	7 am–7 pm	65	75
	7 pm–7 am	60	70

Typical hourly average noise levels resulting from the construction of roadways, sewers, and trenches are about 79 dBA to 88 dBA L_{eq} measured at a distance of 15.2 meters (50 feet) from the center of the site during busy construction periods. Construction noise levels would vary on a day-to-day basis depending on the actual activities occurring at the site. Table 3.7-4 summarizes the typical range of average noise levels that could be expected during construction phases.

Table 3.7-4
Typical Ranges of Energy Equivalent Noise Levels at 15.2 Meters (50 Feet), L_{eq} in dBA, at Construction Sites

Phase	Public Works Roads and Highways, Sewers, and Trenches	
	With all pertinent equipment present at site	With minimum required equipment present at site
Ground Clearing	84	84
Excavation	88	78
Foundations	88	88
Erection	79	78
Finishing	84	84

Source: USEPA 1973, 2-104.

Maximum noise levels resulting from individual pieces of equipment would range from about 74 dBA to 89 dBA measured at a distance of 15.2 meters (50 feet) from the construction equipment. Table 3.7-5 summarizes the typical range of maximum noise levels that could be expected with construction equipment.

Construction-generated noise levels drop off at a rate of about 6 dBA per doubling of the distance between the source and receptor. Shielding by buildings or terrain can substantially reduce construction noise levels at distant receptors.

Table 3.7-5
Maximum Noise Levels from Construction Equipment at 15.2 Meters (50 Feet)

Equipment	Maximum Noise Levels (dBA)
Dozer	88
Excavator	85
Elevating Scraper	89
Backhoe	84
Front-End Loader	87
Water Truck	87
Tractor Trailer – 20 cubic yards	80
Crane	86
Compactor	82
Paver	85
Welding Machine	74
Generator	84
Drill Rig	88

Source: National Cooperative Highway Research Program 1999; USEPA 1971.

Noise Levels in Excess of Applicable Standards

Maximum and average noise levels generated by construction activities would exceed the construction noise level standards established by El Dorado County. El Dorado County's maximum allowable noise exposure levels for construction noise during the daytime (an hourly average limit of 55 dBA L_{eq}) would generally be 6 to 13 dB below ambient hourly average traffic noise levels at the closest receptors to the highway alignment (approximately 30.5 meters [100 feet] from the roadway center). Similarly, the maximum noise level standard of 75 dBA would typically be below ambient maximum noise levels resulting from vehicular traffic along the highways (e.g., motorcycles, trucks, etc.). The noise level standards presented in the General Plan (El Dorado County 2004) do not account for the duration of Program construction. A reasonable construction period (1 year) should be allowed so that projects of limited duration can be mitigated by the implementation of a series of BMPs.

Typical hourly average noise levels resulting from the construction of roadways, sewers, and trenches are about 73 dBA to 82 dBA, measured at a distance of 30.5 meters (100 feet). Maximum noise levels resulting from individual pieces of equipment range from about 68 dBA to 83 dBA, measured at a distance of 30.5 meters (100 feet). Hourly average noise levels could exceed 55 dBA L_{eq} within about 152.4 to 670.6 meters (500 to 2,200 feet) of the construction site during various activities, assuming no excess attenuation resulting from shielding or ground absorption. Maximum noise levels would exceed 75 dBA within approximately 76.2 meters (250 feet) of the loudest pieces of construction equipment.

Maximum and hourly average noise levels would exceed the County's construction noise standards. Program construction activities would affect a particular receptor or group of receptors for a temporary period of time, due to the transitional nature of the work as it proceeds

along each highway within each segment. The impact would be less than significant provided that standard Caltrans construction noise control measures are implemented at all construction sites and where noise levels that exceed the County's standards can be limited to one construction season or less.

Temporary Noise Increases During Construction

Construction activities would result in temporary noise level increases at receptors along the project alignment. This is a less-than-significant impact given the anticipated construction schedule and the amount of time that particular noise-sensitive receptors would be affected by the Program.

Road construction activities could take up to three to four construction seasons to complete on roadway segments due to the relatively small construction period available each year. Noise generated by roadway construction does not typically last over extended periods of time, because activities move along the right-of-way as construction proceeds.

Construction equipment would likely include air compressors, paving machines, forklift trucks, loaders, pavement grinders, dump trucks, trenching machines, compactors, and backhoes. Noise levels generated by construction activities could be as high as 82 dBA. L_{eq} at receptors 30.5 meters (100 feet) from the construction site would be expected to exceed 60 dBA L_{eq} and would increase the ambient noise environment by at least 5 decibels during the busiest hours at receptors up to 396.2 meters (1,300 feet) from the construction site. However, construction activities are anticipated to affect a particular receptor or group of receptors for a period of time considerably less than one construction season. Noise impacts resulting from construction would be less than significant because of the short exposure period.

Construction noise impacts could result when construction activities occur during noise-sensitive times of the day (early morning, evening, or nighttime hours); the construction occurs in areas immediately adjoining noise-sensitive land uses; or construction durations last over extended periods of time.

Post-Construction Noise

Noise levels along each of the project segments would be the same after construction is completed as they were prior to the commencement of construction. The Program will not change highway capacity or traffic flow to any measurable extent that would have any affect on long-term noise levels. There would be no impacts or change to the existing noise environment.

3.7.3.2 TRPA Considerations

The Program would not alter or otherwise affect aircraft volume or flight patterns, and therefore it would have no impact on the TRPA Threshold N-1 pertaining to aircraft noise. Similarly, noise levels generated by single events relating to boats, motor vehicles, motorcycles, off-road vehicles, and snowmobiles would not be affected by the Program.

Although the Program would not alter future noise levels for communities, temporary noise levels would increase during construction activities. Mitigation measures would be employed to minimize adverse effects associated with construction noise, particularly if construction takes place outside of the 8:00 a.m. to 6:30 p.m. timeframe when construction noise is exempted from

the TRPA Code of Ordinances considerations. Mitigation measures are described in Section 3.7.4.

3.7.3.3 No Project Alternative

The No Project Alternative would consist of not implementing the EIP projects for which Caltrans is the lead agency. Therefore, there would be no noise impacts.

3.7.4 Avoidance, Minimization, and Mitigation

Although the potential for construction noise impacts is considered less than significant, standard construction noise control measures should be implemented to reduce the effects of construction noise on adjacent land uses. Caltrans requires construction contractors to comply with Standard Specifications and Special Provisions. These include that the contractor shall comply with all local sound control and noise level rules, regulations, and ordinances that apply to any work performed for the construction contract. Typical measures that may be considered and/or implemented at noise sensitive locations include the following:

- Noise-generating activities at the construction site or in areas adjacent to the construction site associated with the Program would be restricted to a specified daytime period that would be included in the construction contract.
- Equip internal combustion engine–driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.
- Prohibit unnecessary idling of internal combustion engines.
- Avoid staging of construction equipment within 61 meters (200 feet) of residences and locate all stationary noise-generating construction equipment, such as air compressors and portable power generators, away from existing noise-sensitive receptors.
- In unusual circumstances where daytime construction noise would be ongoing and located immediately adjacent to noise-sensitive land uses, temporary barriers could be considered to screen stationary noise-generating equipment.
- Use “quiet” air compressors and other stationary noise sources if such technology is available.
- The project Resident Engineer would be responsible for responding to any local complaints about construction noise.

This section summarizes the results of the air quality analysis for the proposed Program (URS 2006b).

3.8.1 Environmental Setting

Located in El Dorado and Placer counties, the Lake Tahoe Basin was designated as its own air basin in 1969. The air quality in the Lake Tahoe Air Basin is regulated by several agencies including the USEPA, the California Air Resources Board (CARB), and the TRPA. Each of these agencies has developed rules and regulations to attain various air quality goals. Although USEPA regulations may not be superseded, both state and local regulations may be more stringent than federal air quality regulations. In general, the USEPA and CARB are responsible for regulating emissions from on-road and off-road vehicles and establishing air quality standards. The TRPA is responsible for implementing federal and state regulations, permitting stationary sources of air pollution, and developing plans aimed at attaining ambient air quality standards. Emissions from projects associated with changes in automobile traffic are addressed through the TRPA's air quality plans.

3.8.1.1 Air Quality Standards

The federal government, through the USEPA, has established primary and secondary National Ambient Air Quality Standards (NAAQS) for criteria pollutants[8] under the provisions of the Clean Air Act. Most recently, the USEPA also promulgated new 8-hour ambient air quality standards for ozone (O_3) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). The new 8-hour O_3 standard has replaced the 1-hour O_3 standard, which has been revoked for the region. The NAAQS values are summarized in Table 3.8-1.

The USEPA has classified air basins (or portions thereof) as "attainment," "nonattainment," or "unclassified" for each criteria air pollutant, based on whether or not the NAAQS has been consistently achieved. A single exceedance of the NAAQS does not necessarily indicate that the air basin will be classified as being in nonattainment of the ambient air quality standards. Instead, the USEPA performs a numerical analysis on the air quality monitoring data to determine if the air quality is in compliance with the NAAQS. If an area is designated unclassified, it is because a lack of adequate air quality data were available on which to base a nonattainment or attainment designation. The USEPA has classified the Lake Tahoe Air Basin as being in attainment of the federal standards for the criteria pollutants.

Four ambient pollutant monitoring stations are located within the Lake Tahoe Air Basin: Echo Summit Station, Harvey's Resort Station, South Lake Tahoe–Airport Station, and South Lake Tahoe–Sandy Way Station. Tables 3.8-2 and 3.8-3 summarize measured criteria pollutant concentrations from 2003 to 2005 at the Echo Summit Station and the South Lake Tahoe–Sandy Way Station, respectively. These stations provided the greatest amount of ambient pollutant monitoring data.

[8] "Criteria pollutants" refer to the pollutants that have established federal or state regulatory limits. The criteria pollutants are listed in Table 3.8-1.

Table 3.8-1
Federal and California Ambient Air Quality Standards

Pollutant	Averaging Time	Federal[1]	State
Ozone (O_3)	1 Hour	None[4]	0.09 ppm
	8 Hour	0.08 ppm	0.07 ppm [3]
Particulate Matter (PM_{10})	24 Hour	150 µg/m^3	50 µg/m^3
	Annual Average	50 µg/m^3	20 µg/m^3
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	65 µg/m^3	None
	Annual Average	15 µg/m^3	12 µg/m^3
Carbon Monoxide (CO)	1 Hour	35 ppm	20 ppm
	8 Hour	9 ppm	9.0 ppm
Nitrogen dioxide (NO_2)	1 Hour	None	0.25 ppm
	Annual Average	0.053 ppm	None
Lead (Pb)	30 days	None	1.5 µg/m^3
	Calendar Quarter	1.5 µg/m^3	None
Sulfur Dioxide (SO_2)	1 Hour	None	0.25 ppm
	3 Hour	0.5 ppm [2]	NA
	24 Hour	0.14 ppm	0.04 ppm
	Annual Average	0.03 ppm	None
Sulfates	24 Hour	None	25 µg/m^3
Hydrogen Sulfide	1 Hour	None	0.03 ppm
Visibility Reducing Particles	8 Hour	None	Extinction coefficient of 0.23 per km
Vinyl Chloride	24 Hour	None	0.01 ppm

Source: CARB ADAM Web site, www.arb.ca.gov/aqs/aaqs2.pdf
Notes:
1. Primary NAAQS unless otherwise noted
2. Secondary NAAQS
3. Approved by CARB on April 2005 and expected to go into effect in 2006.
4. 1-hour ozone standard revoked June 5, 2005 except for areas that do not yet have an effective date for their 8-hour designations.
µg/m^3 = microgram(s) per cubic meter
ppm = parts per million

Table 3.8-2
Maximum Measured Pollutant Concentrations at Echo Summit

Pollutant	Averaging Time	Units	Standards/Threshold			Maximum Measured Concentration		
			Federal	State	TRPA	2003	2004	2005
Ozone (O_3)	1 hour	ppm	None	0.09	0.08	0.082(3)	0.096(2,3)	0.079
	8 hour	ppm	0.08	0.070	None	0.079(2)	0.082(1,2)	0.070
Particulate Matter (PM_{10})	24 hour	$\mu g/m^3$	150	50	50	46.0/36.0(4)	24.0/19.0(4)	NA
	Annual Average	$\mu g/m^3$	50	20	20	7.9/6.3(4)	NA	NA
	Annual Average	$\mu g/m^3$	15	12	None	NA	NA	NA
Fine Particulate Matter ($PM_{2.5}$)	24 hour	$\mu g/m^3$	65	None	None	NA	NA	NA
	Annual Average	$\mu g/m^3$	15	12	None	NA	NA	NA
Nitrogen Dioxide (NO_2)	1 hour	ppm	None	0.25	None	0.059	0.068	NA
	Annual Average	ppm	0.053	None	None	0.003	0.002	NA
Carbon Monoxide (CO)	1 hour	ppm	35	20	6	2.4	6.1	NA
	8 hour	ppm	9	9.0	None	1.9	4.4	NA

Source: Monitoring station located at 21200 US 50, Little Norway, CA 95721 (CARB 2005; USEPA 2006).
Notes: $PM_{2.5}$ and SO_2 were not monitored at this station during this period.
1. Exceeds the federal standard.
2. Exceeds the state standard.
3. Exceeds TRPA standard.
4. Federal/state values. The federal and state values differ due to differences in sampling methods and criteria.
$\mu g/m^3$ = microgram(s) per cubic meter
NA= not available
ppm = part(s) per million

Table 3.8-3
Maximum Measured Pollutant Concentrations at South Lake Tahoe–Sandy Way

Pollutant	Averaging Time	Units	Standards/Thresholds			Maximum Measured Concentration		
			Federal	State	TRPA	2003	2004	2005
Ozone (O_3)	1 hour	ppm	None	0.09	0.08	0.075	0.066	NA
	8 hour	ppm	0.08	0.070	None	0.066	NA	NA
Particulate Matter (PM_{10})	24 hour	$\mu g/m^3$	150	50	50	61.0/52.0[1,2,3]	47.0/41.0[3]	38.0/33.0[3]
	Annual Average	$\mu g/m^3$	50	20	20	17.6/15.0[3]	NA	NA
Fine Particulate Matter ($PM_{2.5}$)	24 hour	$\mu g/m^3$	65	None	None	21/24[3]	20/23.2[3]	NA
	Annual Average	$\mu g/m^3$	15	12	None	7.2	NA	NA
Nitrogen Dioxide (NO_2)	1 hour	ppm	None	0.25	None	0.052	0.055	NA
	Annual Average	ppm	0.053	None	None	0.010	0.012	NA
Carbon Monoxide (CO)	1 hour	ppm	35	20	6	2.4	2.2	NA
	8 hour	ppm	9	9.0	None	1.5	1.2	NA

Source: Monitoring station located at 3337 Sandy Way, South Lake Tahoe CA 96150 (CARB 2005; USEPA 2006).
Notes: SO_2 was not monitored at this station during this period.
1. Exceeds the state standard.
2. Exceeds the TRPA standard.
3. Federal/state values. The federal and state values differ due to differences in sampling methods and criteria.
$\mu g/m^3$ = microgram(s) per cubic meter
NA= not available
ppm = part(s) per million

Monitoring data for the South Lake Tahoe–Airport Station, located at 1901 Airport Road, South Lake Tahoe, California, are only available after 2005 and for ozone. In 2005, the maximum 1-hour and 8-hour concentrations of ozone were 0.073, and 0.067 ppm, respectively. Monitoring data from the Harvey's Resort Station, located at Stateline, Nevada, are only available for CO. The maximum 1-hour CO concentration at Harvey's Resort Station from 2003 to 2005 was 13.0 ppm in 2003. The maximum 8-hour CO concentration at Harvey's Resort Station from 2003 to 2005 was 4.4 ppm in 2003.

3.8.1.2 Air Quality in the Lake Tahoe Air Basin

The following discusses the measured local concentrations, health effects, and other characteristics of ozone (O_3), particulate matter less than 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2). Lead (Pb), sulfates, and hydrogen sulfide are of least concern because levels are well below standards and no major sources of these pollutants exist in the area.

Ozone

O_3 is a colorless gas that has a pungent odor and causes eye and lung irritation, visibility reduction, and crop damage. A primary constituent of smog, O_3 is formed in the atmosphere in the presence of sunlight by a series of chemical reactions involving oxides of nitrogen (NO_x) and

reactive organic gases (ROGs). Because these reactions occur on a regional scale, O_3 is considered a regional air pollutant. Industrial fuel combustion and motor vehicles are primary sources of NO_x and ROGs.

As shown in Tables 3.8-2 and 3.8-3, O_3 concentrations have exceeded federal, state, and TRPA ambient air quality standards at both monitoring stations. However, these violations are not large enough or frequent enough for the USEPA or the CARB to classify the Lake Tahoe Air Basin as being in nonattainment of the standards.

Particulate Matter

Particulate matter is generally composed of particles in the air such as dust, soot, aerosols, fumes, and mists. Of particular concern are inhalable particulates that have aerodynamic PM_{10}. A subgroup of these particulates is fine particulates ($PM_{2.5}$), which have very different characteristics, sources, and potential health effects than coarse particulates (particles with aerodynamic diameter between 2.5 to 10 micrometers). Coarse particulates are generated by sources such as windblown dust, agricultural fields, and dust from vehicular traffic on unpaved roads. $PM_{2.5}$ is generally emitted from activities such as industrial combustion, vehicle exhaust, and residential wood-burning stoves and fireplaces. $PM_{2.5}$ is also formed in the atmosphere when gases, such as SO_2, NO_x, and volatile organic compounds, emitted by combustion activities are transformed by chemical reactions in the air. PM_{10} affects breathing and the respiratory system. Specifically, it can damage lung tissue and contribute to cancer and premature death. Separate standards for $PM_{2.5}$ were established in 1997 because these smaller particles can penetrate deep into the respiratory tract and cause their own unique adverse health effects.

Measured concentrations at the two monitoring stations have not exceeded federal PM_{10} standards since 2003. Historically, however, there have been periods of exceedances of the state PM_{10} standard, in particular in 2003 when the state PM_{10} standard was exceeded for about 6 days. These exceedances have contributed to the region being classified as nonattainment for the state PM_{10} standard. There have been no violations of the federal or state standards for $PM_{2.5}$ for the last 5 years.

Carbon Monoxide

CO is an odorless, colorless gas that can impair the transport of oxygen in the bloodstream; aggravate cardiovascular disease; and cause fatigue, headache, confusion, and dizziness. CO forms through incomplete combustion of fuels in vehicles, wood stoves, industrial operations, and fireplaces. Vehicular exhaust is a major source of CO. CO tends to dissipate rapidly into the atmosphere; consequently, it is generally a concern at the local level, particularly at major road intersections. Measured CO concentrations for 2003 to 2005 are well below federal, state, and TRPA standards.

Nitrogen Dioxide

NO_2 is a brownish, highly reactive gas that can irritate the lungs, cause pneumonia, and lower the resistance to respiratory infections. Oxides of nitrogen (NO_x), which include NO_2, are a key precursor to O_3 and acid rain. NO_x forms when fuel is burned at high temperatures, and principally comes from transportation sources and stationary fuel combustion sources such as

electric utility and industrial boilers. NO_2 monitoring levels (Tables 3.8-2 and 3.8-3) are well below the state, federal, and TRPA standards.

Sulfur Dioxide

SO_2 is a colorless acidic gas with a strong odor. High concentrations of SO_2 affect breathing and may aggravate existing respiratory and cardiovascular disease. SO_2 is also a primary contributor to acid deposition, which causes acidification of lakes and streams and can damage trees, crops, building materials, and statues. In addition, sulfur compounds in the air can contribute to visibility impairment. The major source category for SO_2 is fuel-burning equipment combusting fossil fuels. SO_2 is not measured at the monitoring stations in the Lake Tahoe basin. Major sources of this pollutant such as industry are not typically present within the Tahoe area.

3.8.2 Regulatory Setting

The following summarizes the federal, state, and local regulatory settings applicable to the Lake Tahoe Air Basin.

3.8.2.1 Federal

Transportation planning and projects that involve federal funding or FHWA approval must show that they conform to a USEPA-approved plan, specifically the State Implementation Plan (SIP). The purpose of showing conformity is to demonstrate that the project has been adequately included and evaluated in the process of local, state, and federal transportation project programming and air quality analyses. The proposed Program does not involve federal funding or FHWA approvals at the time this EIR was prepared.

There is the potential that individual projects under the EIP may have federal involvement in the future. Section 176(c) of the Clean Air Act Amendment includes the requirement that federally funded or approved transportation plans, programs, and projects conform to the SIP, as noted above. However, 40 Code of Federal Regulations (CFR) Section 93.126 lists transportation projects that are ordinarily exempt from the requirement to determine conformity with the SIP. Such projects may proceed toward implementation even in the absence of a conforming transportation plan and Transportation Improvement Plan or Program. No further air quality evaluation would be necessary. Many elements of the EIP can potentially be defined per these categories, which are listed in Table 3.8-4. Ultimately, if federal funding is involved in a specific future project, the project should be reviewed against the definitions listed in Table 3.8-4. The determination of whether conformity requirements apply would have to be confirmed by FHWA.

Table 3.8-4
Highway/Transportation Projects Ordinarily Exempt from Federal Transportation Conformity Requirements

Safety Projects:
- Railroad/highway crossing.
- Hazard elimination program.
- Safer non-federal-aid system roads.
- Shoulder improvements.
- Increasing sight distance.
- Safety improvement program.
- Traffic control devices and operating assistance other than signalization projects.
- Railroad/highway crossing warning devices.
- Guardrails, median barriers, crash cushions.
- Pavement resurfacing and/or rehabilitation.
- Pavement marking demonstration.
- Emergency relief (23 USC 125).
- Fencing.
- Skid treatments.
- Safety roadside rest areas.
- Adding medians.
- Truck climbing lanes outside the urbanized area.
- Lighting improvements.
- Widening narrow pavements or reconstructing bridges (no additional travel lanes).
- Emergency truck pullovers.

Note: Partial listing from 40 CFR 93.126.

3.8.2.2 State

Lake Tahoe is located within both California and Nevada. However, the Program would take place along segments of US 50 and SR 89, entirely within the state of California. Consequently, regulations for the Nevada Department of Environmental Planning (NDEP) do not apply to the Program. This section only focuses on regulations established for the State of California.

California has established its own ambient air quality standards for criteria air pollutants that are, in general, more stringent than the federal standards (see Table 3.8-1). The CARB enforces these standards by regulating mobile emission sources and overseeing activities of the local air pollution control districts and regional air quality management districts. Of the criteria pollutants that have been classified, the Lake Tahoe Air Basin is in attainment of the California ambient air quality standards except for the California 24-hour PM_{10} standard. The Lake Tahoe Air Basin has not been classified for visibility-reducing particles and hydrogen sulfide because insufficient data are available to determine whether the pollutant concentrations are in attainment of the regulatory standards. In the past, there have been exceedances of the California 8-hour ozone standard. However, the Lake Tahoe Air Basin is still classified as being in attainment of the 8-hour ozone standard because the exceedances have not been frequent or significant enough to change the basin's attainment status (see Section 3.8.1.1).

Significance Criteria

Potentially applicable CEQA significance criteria for the Program include the following.

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

- Expose sensitive receptors to substantial pollutant concentration.
- Create objectionable odors affecting a substantial number of people.

3.8.2.3 Regional

The TRPA has regional jurisdiction over air quality in the bi-state Lake Tahoe Air Basin. The TRPA regulates most air pollutant sources with the exceptions of motor vehicles, locomotives, aircraft, agriculture (forestry) equipment, and marine vessels. State and local government projects, as well as those funded by the private sector, are subject to the requirements of the TRPA. In addition, the TRPA, along with the NDEP and CARB, maintains ambient air quality monitoring stations at numerous locations throughout the air basin. The stations are used to monitor the concentration of criteria pollutants and to assist in the classification of the attainment status of the air basin.

TRPA has adopted a Regional Transportation Plan–Air Quality Plan (RTP-AQP) that focuses on attaining the federal and state air quality standard. Within the RTP-AQP, TRPA has established a set of air quality thresholds that tend to be equivalent to or more stringent than the federal and state air quality standards. The TRPA ambient air quality standards for criteria pollutants are summarized below:

- CO concentrations shall be maintained at or below 6 parts per million (ppm), averaged over 8 hours
- O_3 concentrations shall be maintained below 0.08 ppm, averaged over 1 hour
- The PM_{10} threshold for TRPA is equivalent to the state ambient air quality standards (20 $\mu g/m^3$ averaged over a year and 50 $\mu g/m^3$ averaged over a 24-hour period)

No TRPA standards exist for NO_2 and SO_2. However, the concentration of these criteria pollutants must still comply with federal and state ambient air quality standards.

In addition to the ambient air quality standards for criteria pollutants, TRPA has also established air quality thresholds for visibility, traffic volume, vehicle miles traveled, and wood smoke. Projects that exceed these thresholds are considered to be a significant impact on the air quality of the Lake Tahoe Basin.

3.8.3 Impacts

This section identifies and discusses the environmental impacts resulting from the proposed Program. A detailed discussion of mitigation measures is included in Section 3.8.4.

3.8.3.1 CEQA Considerations

Construction

Construction is a source of dust emissions that have the potential to result in temporary impacts on air quality (i.e., exceed state air quality standards for PM_{10}). Construction emissions would result from earth moving and heavy equipment use. These emissions would be generated from land clearing, ground excavation, cut and fill operations, and pavement activities. Dust emissions would vary from day to day depending on the level of activity, the specific operations, and the

prevailing weather. In addition to particulate emissions from earth moving, combustion emissions from fuel-powered construction equipment may create a temporary impact on local air quality. Such equipment is typically diesel-fueled. Depending on the activities involved and their duration, there is the potential for unmitigated construction activities to result in substantial air quality impacts, in particular with local dust and particulate emissions.

Operation

The Program would not increase the total traffic volume in the project area. Following the completion of construction, the existing number of through travel lanes would be the same as prior to construction.

3.8.3.2 TRPA Considerations

Construction

The TRPA guidelines do not provide a numerical threshold of significance for construction emissions. Instead, the emissions from construction are considered to have a temporary impact that must be mitigated through the use of BMPs and revegetation as determined by TRPA. A description of the best management practices proposed to control airborne dust emissions is provided in Section 3.8.4.

Operation

Under TRPA guidelines, an insignificant increase in traffic is considered an increase in volume of 100 or fewer daily vehicle trips (TRPA Code of Ordinances, Section 9.3.2C). None of the Program activities are envisioned as resulting in permanent change in capacity of that level. Consequently, the Program would not introduce any additional emission sources. Impacts to air quality will be less than significant.

3.8.3.3 No Project Alternative

The No Project Alternative would consist of not implementing the EIP projects for which Caltrans is the lead agency; therefore, there would be no impacts to air quality.

3.8.4 Avoidance, Minimization, and Mitigation

3.8.4.1 Construction

The proposed Program is expected to generate suspended particulate matter from construction activities. The TRPA regulates particulate matter emissions due to construction activities by requiring that projects that involve the creation or relocation of land coverage submit a construction permit that details the dust control measures that would be applied during construction. The TRPA Coordinator would be required to apply for and to obtain the necessary TRPA permit(s). Typical dust control practices that may be required to reduce the amount of dust from construction emissions may include the following measures:

- Cover open-bodied trucks when used for transporting materials likely to generate airborne dust
- Water disturbed (graded or excavated) surfaces as necessary, increasing frequency when weather conditions require
- Water disturbed areas to form a compact surface after grading and earth working
- Use chemical dust suppressants when watering is not sufficient
- Limit areas to be cleared to facilities required for the project and necessary equipment and materials stockpile areas
- Limit the speed of construction equipment and vehicles on unpaved roads when conditions require
- Erosion control planting of exposed slopes after construction
- Incorporation of standard erosion control measures as part of the contract.

The dust control activities would comply with Section 10 of Caltrans' *Standard Construction Specifications* (Caltrans 2006b) and would be reviewed and approved of by TRPA.

In addition, the following measures can mitigate pollutant emissions in construction equipment exhaust:

- Keep engines properly tuned
- Limit engine idling
- Avoid unnecessary concurrent usage of equipment.

3.8.4.2 Operation

With incorporation of the Caltrans *Standard Construction Specifications* (Caltrans 2006b), the operation of the proposed Program would not have any significant impacts on air quality. Consequently, no air quality–related mitigation measures would be required.

This section describes the results of a review of contaminated site databases for the vicinity of the US 50 and SR 89 project segments, and the potential impacts and mitigation measures from implementing the proposed Program.

3.9.1 Environmental Setting

Caltrans completed Initial Site Assessments (ISAs) for the project segments on US 50 in 2003 (Caltrans 2003c, Attachment G) and on SR 89 in 2002 (Caltrans 2003d, Attachment G). The evaluation included a review of photos of the routes; listings of local, state, and federal databases as compiled by the firm Vista Information Solutions, including the Cortese list; and maps from the California Department of Conservation Division of Mines and Geology covering the project area. The ISA evaluations were performed to determine if hazardous waste issues affect the project segments and whether follow-up investigations would be necessary. The studies are summarized in this section for this program-level EIR to identify the potential for impacts, and as specific segments or projects are advanced in the environmental review process the investigations will be updated. Preliminary Site Investigations, involving site-specific evaluation and potentially testing of soils and water were recommended to ultimately determine specifications for addressing any contamination issues potentially present at the Program.

Based on the ISA reviews, it was concluded that the potential for hazardous waste exists with respect to the following:

- Lead-contaminated soils from lead additives in combustible gasoline where particulates have been aerially deposited. These soils must be removed and disposed of in compliance with a Lead Compliance Plan developed in accordance with Title 8, Section 1532.1(e)(2) of the California Code of Regulations (CCR).
- Yellow thermoplastic traffic stripe removal and disposal. The yellow traffic stripe in the existing portion of the roadway may contain heavy metals such as lead and chromium that may exceed hazardous waste thresholds established by the CCR and may produce toxic fumes when heated. Any removal of yellow traffic stripe material must be done in accordance with a Lead Compliance Plan and disposed of at a Class I disposal facility.

Table 3.9-1 lists the sites that were identified in the ISAs as having the potential to contain hydrocarbon-contaminated soils. At the time the individual projects move forward, the contamination of these sites may require further verification.

Table 3.9-1
Potentially Contaminated Sites Along US 50 and SR 89 Project Segments

Site Name	Address	Issue
Beacon/Swiss Mart/United Gas	913 Emerald Bay	Leaking UST
Unknown Source North of US 50/SR 89 Junction	Unknown source	PCE plume in groundwater
South Y Shell	1020 Emerald Bay Road	Leaking UST
National Car Rental	1101 Emerald Bay Road	Leaking UST
USA Gas #7 (Oasis Service Station)	1140 Emerald Bay Road	Leaking UST
Meyers Beacon Gas Station	3208 US 50	Leaking UST
South Y PCE	US 50	Leaking UST
Meyers Shell	2950 US 50	Leaking UST
Moss Chevron (Al's Chevron Way)	3651 Lake Tahoe Blvd.	Leaking UST
Al's Ski Room (former Chevron 9-2450)	3659 Lake Tahoe Blvd.	Leaking UST
Jet Thru Car Wash (Lake Tahoe Car Wash)	3668 Lake Tahoe Blvd.	Leaking UST
Perfection Connection (former Arco #0777)	3755 Lake Tahoe Blvd.	Leaking UST
Montoya Shell	3953 Lake Tahoe Blvd.	Leaking UST
Tahoe Tom's Gas Station	4029 Lake Tahoe Blvd.	Leaking UST
Tosco – Facility #3553	4115 Lake Tahoe Blvd.	Leaking UST

Source: Caltrans 2003c, Attachment G; 2003d, Attachment G.
UST = Underground storage tank

3.9.2 Regulatory Setting

3.9.2.1 Federal and State

The treatment of hazardous substances is generally subject to state regulations administered by the Department of Toxic Substances Control, or by the RWQCB for underground storage tanks. The database listing used to preliminarily identify sites that might be contaminated or use or store hazardous materials would include properties that are subject to regulation because of known contamination, clean-up or treatment actions, or the storage or handling of materials.

3.9.2.2 State

Significance Criteria

Potentially applicable CEQA significance criteria for the Program include the following.

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

- Emit hazardous emissions or handle hazardous or acutely hazardous material, substances, or waste within one-quarter mile of an existing or proposed school.
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.
- For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area.
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

3.9.2.3 Regional

TRPA does not have any thresholds specifically for the management of hazardous materials. However, possible spills of hazardous materials such as gasoline, diesel fuels, fuel oil, aviation fuel, pesticides, solvents, chlorine, and other substances create the potential for serious water quality problems. The *Lake Tahoe Basin Water Quality Management Plan* (known as the 208 Plan; TPRA n.d., I:146) provides that TRPA shall cooperate with other agencies with jurisdiction in the Tahoe Region in the preparation, evaluation, and implementation of toxic and hazardous substance spill control plans covering Lake Tahoe, its tributaries, and the groundwater and lands of the Tahoe Region. TRPA will cooperate with the Forest Service, U.S. Environmental Protection Agency (USEPA), U.S. Coast Guard, state water quality and health agencies, and local units of government to develop programs to prevent toxic and hazardous spills and to formulate plans for responding to spills that may occur. The Lahontan Regional Water Quality Control Board (Lahontan RWQCB) regionwide control measures for hazardous waste leaks, spills, and illegal discharges are applicable to the Lake Tahoe Basin, as are statewide requirements for the preparation and implementation of local government hazardous waste management plans.

3.9.3 Impacts

3.9.3.1 CEQA Considerations

This section reviews the hazardous materials to be handled, used, and stored as part of the proposed Program and the hazardous and nonhazardous wastes to be generated and stored in conjunction with Program construction and operation. It also discusses the procedures and engineering controls to be used to minimize potential environmental impacts from the on-site handling, storage, and use of these materials.

Construction Phase

The hazardous materials anticipated to be used on-site during Program construction include gasoline, diesel fuel, oil, and lubricants for operation of construction equipment. These materials

are typically used, handled, and stored by contractors on all roadway construction projects. Contractors are required to handle hazardous materials in accordance with applicable laws, including health and safety requirements. No acutely hazardous materials will be used or stored on-site during construction.

Construction of the proposed Program could potentially result in small fuel spills from construction or vehicles. Construction activities may also impact those sites with potentially contaminated soil, listed in Table 3.9-1.

Potential hazardous material impacts relating to stormwater runoff and groundwater are discussed in greater detail in Section 3.2.

Operational Phase

No impacts related to Program operation are anticipated.

3.9.3.2 TRPA Considerations

Although no specific thresholds apply to the handling of hazardous materials, the TRPA Initial Environmental Checklist includes a question on the impact of the proposed Program on the possibility of an increased exposure to health hazards. No such exposure is anticipated. However, the Program will include health and safety provisions for construction work to ensure that the potential exposure to hazardous materials is minimized in compliance and as required by regulatory agencies, such as the Lahontan RWQCB.

3.9.3.3 No Project Alternative

The No Project Alternative would have no adverse impacts regarding hazardous materials, with the exception of potential pollutants in stormwater runoff to groundwater. These potential impacts are discussed in Section 3.2.

3.9.4 Avoidance, Minimization, and Mitigation

Equipment to clean up fuel leaks and spills will be available on-site. The contractors are required to safely store materials and immediately clean up spills if they occur.

Sites described in Section 3.9.1 will be considered for follow-up Preliminary Site Investigations, which may involve sampling and testing of soils and groundwater to determine the type and extent of any contamination and its location with respect to property acquisition and construction areas. Final specifications will be developed to address any potentially contaminated areas in compliance with regulatory agencies. The contractor would be required to obtain encroachment permits, prepare work plans and health and safety plans, conduct site investigations, and prepare site investigations for Caltrans review and approval.

This section presents geological conditions in the area of the proposed Program, as well as potential impacts and mitigation measures. The background geological information comes primarily from the Project Study Reports (PSRs) for US 50 and SR 89 (Caltrans 2003c, 2003d).

3.10.1 Environmental Setting

A review of published data such as California Geologic Survey (CGS) publications and National Resource Conservation Service (NRCS) soil surveys, a review of previous site explorations, and a site reconnaissance were conducted for the proposed Program. No subsurface exploration or laboratory testing was performed.

3.10.1.1 Physical Setting

The Program project location ranges from steeply sloping mountainous terrain in areas such as Luther Pass, Echo Summit, and above Emerald Bay to the more gently sloping topography in the area of South Lake Tahoe. Elevations vary from 2,170 meters (7,120 feet) above mean sea level (msl) at the southern terminus of Segment 1 below Echo Summit to 1,902 meters (6,240 feet) above msl along South Lake Tahoe. Both SR 89 and US 50 cross numerous drainages within the project limits, all of which ultimately drain into Lake Tahoe.

3.10.1.2 Human-Made and Natural Features

US 50 and SR 89 were constructed with cuts and fills, some of which are quite extensive in the areas of steep topography, such as above Emerald Bay. Existing cuts appear to be in hard rock (granite), glacial till, or mixed hard rock and glacial till.

The existing highways cross numerous drainages of varying size with associated culverts and bridges. Cut-and-fill slopes for both highways exhibit areas of erosion.

3.10.1.3 Site Geology

The proposed Program would be located on Quaternary-aged lake deposits, Pleistocene-aged glacial till, and Mesozoic granites and diorites (CGS 1987). Depth to competent bedrock varies throughout the project limits.

Naturally occurring asbestos is not found in the project area (CGS 2000a, 2000b; Caltrans 2001).

3.10.1.4 Faulting and Seismicity

The Lake Tahoe Fault is located approximately 14 km (8.7 miles) northwest of US 50, based on the Caltrans California Seismic Hazard Map (Caltrans 1996). This fault could produce a maximum credible earthquake of magnitude 6.50. The maximum credible earthquake from this fault would result in a peak horizontal bedrock acceleration of approximately 0.4 g (g = acceleration due to gravity) at the site (Caltrans 2003c, 2003d).

The Genoa Fault is located approximately 11.5 km (7.l miles) east of the southern end of the project limits and is the controlling fault for the southern one-third of the project area, with a maximum credible earthquake of magnitude 7.25.

3.10.1.5 Soils

Soils of the Lake Tahoe Basin are derived from local bedrock, primarily from andesitic volcanic rocks and granodiorite, with minor areas of metamorphic rock. Glacial moraines are present in some of the valley bottoms. Soils are described and mapped in the *Soil Survey of Tahoe Basin Area, California and Nevada* (USDA 1974).

3.10.2 Regulatory Setting

3.10.2.1 State

The California Building Code contains the minimum standards for grading, building siting, development, seismic design, and construction in California. Local standards other than the California Building Code may be adopted if those standards are stricter. The code includes the standards associated with seismic engineering detailed in the federal Uniform Building Code of 1997.

California Public Resources Code Chapter 7.8, the 1990 Seismic Hazards Mapping Act, allows the lead agency to withhold permits until geologic investigations are conducted and mitigation measures are incorporated into plans. The Seismic Hazards Mapping Act addresses not only seismically induced hazards, but also expansive soils, settlement, and slope stability. The Seismic Hazards Mapping Act will be relevant to soil conditions at some future facility sites.

Significance Criteria

According to CEQA, the Program would have a significant impact with regard to geology, soils, or seismicity if it would:

- Expose people or structures to potential substantial adverse effects involving strong seismic ground shaking.
- Expose people or structures to potential substantial adverse effects involving seismic-related ground failure, including liquefaction.
- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides.
- Result in substantial soil erosion or the loss of topsoil.
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Program, and potentially result in on- or off-site landslides, lateral spreading, subsidence, liquefaction, or collapse.
- Be located on expansive soil, creating substantial risks to life or property.

Water quality impacts from soil erosion and loss of topsoil are addressed in Section 3.2.

3.10.2.2 Regional

Agencies within the Lake Tahoe region including the TRPA, the Lahontan RWQCB, the City of South Lake Tahoe, and Tahoe Basin counties regulate projects that may require additional land coverage or propose new developments in SEZs, which drain directly into Lake Tahoe.

Impervious land coverage increases the potential for stormwater runoff to overload stream channels, erode stream banks, and damage vegetation. Stream channel erosion, in turn, can reduce water clarity in Lake Tahoe. SEZs provide environmental benefits including control of water flows, habitat for wildlife, water purification, and enhanced scenic resources. To minimize the potential for impacts to these resources, TRPA uses the land capability classification system known as the Bailey System (Bailey 1974) to evaluate projects. The Bailey System enables TRPA to restrict the amount of impervious land coverage on existing parcels and to disallow new land coverage within SEZs.

TRPA Thresholds

The following TRPA Thresholds apply for soil conservation:

- SC1 – The TRPA threshold for soil conservation requires that impervious coverage be in compliance with the coverage coefficients defined using the Bailey System (Bailey 1974). Additional land coverage is monitored on a project basis and recorded in square feet. Coverage may be used directly, by coverage transfers within a related project area, or by coverage credits generated from excess right-of-way via route rescission anywhere on the California side of the Lake Tahoe Basin. An excess coverage mitigation program is in place to gradually reduce existing land coverage.
- SC2 – TRPA policy requires the preservation of existing naturally functioning SEZ lands in their natural hydrologic condition; the restoration of all disturbed SEZ lands in undeveloped, un-subdivided lands; and the restoration of the SEZ lands that have been identified as disturbed, developed or subdivided to obtain a 5 percent total increase in the area of naturally functioning SEZ lands.

3.10.3 Impacts

3.10.3.1 CEQA Considerations

Erosion and Landslide Hazard

Construction of retention basins on potentially unstable soils and/or steep slopes could result in erosion and/or landslides. Based on Caltrans field investigations (Caltrans 2003c, 2003d), soil in the project area varies between slightly to highly erosive.

A field investigation performed for the PSRs (Caltrans 2003c, 2003d) noted that deep-seated slides were not observed in the US 50 area during the site reconnaissance. The only slide observed during the field visit for SR 89 was located at KP 28.6 (PM 17.8). This slide, known as the Vikingsholm slide, occurred in January 1997. The slide appeared to have been triggered by excessive rainfall and/or snowfall during the wet season of 1997. Since 1997, the slide area appears to have stabilized. A recommendation was provided to place one-ton-sized rock slope protection in the upper portion of the slide to help prevent erosion and continued upslope failure. Slides also occurred in the Emerald Bay area in 1953 and 1956. Whether these slides occurred in the same area as the Vikingsholm slide is unknown; however, photos from the 1956 slide indicate that it may have occurred in the same area. No other deep-seated slides were observed within the project limits.

Groundwater Seepage

The PSR field investigation noted that groundwater should not be a concern for widening of roadway shoulders. Seepage from groundwater drainage was not observed in the existing cut or fill slopes. Depending on the time of year, seepage may be encountered in rock fractures. Seepage and groundwater conditions will vary according to variations in rainfall, snowmelt, pumping, construction activities, and water levels in Lake Tahoe and the Upper Truckee River.

3.10.3.2 TRPA Considerations

Impervious Coverage

According to Chapter 20.3.B(8) of the TRPA Code of Ordinances, elements of the proposed Program such as turnout construction and roadway widening will create new impervious surfaces that are not exempt from the Bailey land coverage limits.

Within the study limits, there are 27.458 ha (67.85 acres) of SEZ lands along SR 89 and 11.295 ha (27.91 acres) along US 50. Between paving of turnouts and impacts to existing and proposed basins, approximately 1.518 ha (3.75 acres) of SEZ lands along SR 89 and 4.283 ha (4.735 acres) along US 50 would be affected by the proposed Program. Although all of these impacts would not constitute conversion to impervious surfaces, there will be an increase in hard surface coverage. With regard to new, paved/impervious surfaces, the installation of new paved pullouts would affect a total of approximately 0.142 ha (0.35 acre) of SEZ lands. Widening of paved shoulders where needed to meet current design standards could add additional paved impervious surface (outside of SEZ and wetland/jurisdictional areas), but the total surface area cannot be estimated until additional project detail is developed for each segment. Implementation of the mitigation measures described in Section 3.10.4 would reduce these potential impacts.

Final coverage impacts would be determined once TRPA performs the Coverage Verification. This verification is performed by comparing coverage calculation maps, submitted by Caltrans, to 1972 aerial photographs. Any coverage, soft or hard, existing before 1972 is not recognized by TRPA.

3.10.3.3 No Project Alternative

Under the No Project Alternative, none of the potential Program facilities or improvements would be implemented. No impacts to geology would occur beyond the potential erosion of soils in areas where such erosion already occurs.

3.10.4 Avoidance, Minimization, and Mitigation

Individual elements of the proposed Program could require geotechnical investigation if they are located on potentially unstable soils and could present landslide, rockfall, liquefaction, or erosion hazards. The results of such investigations would be used in design of individual project elements to ensure that the impacts would be less than significant. Typical soil conservation measures may include the following:

- Removal of excess land coverage followed by site restoration

- Implementation of BMPs to minimize runoff and soil
- Protection of native vegetation
- Revegetation of disturbed lands

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New growth is restricted in the Lake Tahoe Basin. The TRPA has implemented strict growth and development guidelines that limit the amount of new development that can be added in the area. Since 1987, residential construction has been limited to the addition of 300 units per year in the region. As a result, the region is expected to remain relatively stable in terms of growth and development (TRPA 2002).

The proposed Program would implement NPDES requirements and elements of the Lake Tahoe EIP that relate to US 50 and SR 89. In addition, the Program would improve highway safety where practicable by implementing current design standards. These actions would not require or create additional infrastructure or improve highway level of service such that it would induce growth or development. None of the improvements proposed would remove any existing barriers to growth. While cumulative construction-related impacts sustained over an extended period of time—such as those resulting from the EIP—could lead to a temporary slowdown of growth, the proposed Program would have no permanent impact on growth.

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According to the CEQA Guidelines (14 CCR 15355), *cumulative impacts* refer to two or more individual effects, that, when considered together, are considerable or compound or increase other environmental impacts. The cumulative impact from several projects is the change in the environment that results from the incremental impact of a project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

This section discusses the potential for cumulative effects that could result from the proposed Program and other projects approved or proposed for the study area and vicinity. The area considered for cumulative effects includes the watersheds of the southern Tahoe Basin, from approximately Tahoe Pines on the west shore of Lake Tahoe to Zephyr Cove on the east shore of Lake Tahoe, and the Upper Truckee Watershed.

The following describes other projects that have been approved or proposed within the study area or vicinity.

3.12.1 Proposed Projects in the Study Area and Vicinity

3.12.1.1 El Dorado and Placer County Projects

Sawmill Bicycle Path Project

The County of El Dorado is scheduled to construct and maintain the Sawmill bicycle path and bridge over the Upper Truckee River adjacent to the US 50 corridor as part of the TRPA's Tahoe Regional Bicycle and Pedestrian Master Plan.

Dead Tree Removal – US 50 and Sawmill Road

This project would remove dead trees and reduce hazardous fuels on 20.2 ha (50 acres) in Washoe Meadows State Park. The project will create a defensible fuel profile zone to reduce the threat of a catastrophic wildfire and improve native forest composition and structure. Trees will be designated for removal under the supervision of a California Registered Professional Forester.

Angora 3 Erosion Control Project and Angora Creek Fisheries Enhancement Project

El Dorado County proposes to construct and maintain conveyance and stormwater treatment facilities to address water quality and erosion issues in the project area. In addition, the proposed project includes the improvement of culverts under Lake Tahoe Boulevard to enhance fish habitat within Angora Creek. Both projects are considered environmental improvements as documented in the Lake Tahoe EIP.

Tahoe Pines Erosion Control Project

This project is proposed to reduce erosion, sediments, and nutrients from entering Lake Tahoe at the Tahoe Pines subdivision.

Villas at Harborside
This project consists of the construction of nine residential units at 5120–5140 West Lake Boulevard, Homewood, California.

3.12.1.2 City of South Lake Tahoe Projects

The South Lake Tahoe Planning Department was contacted regarding planned and proposed projects within the city limits. Table 3.12-1 lists all approved and proposed projects in South Lake Tahoe.

Table 3.12-1
Approved and Proposed Projects in South Lake Tahoe

Project	Location	Units (Approximate)	Construction Time Frame	Type
Redevelopment Project 3	Northwest corner of Lake Tahoe Blvd. and Stateline Ave.	180 units w/ 180 lockouts, 8,681 m^2 (93,448 ft^2) convention center, 4,322 m^2 (46,526 ft^2 of retail, 30,142 square foot nightclub/restaurant/bar	May 2007–May 2009	Hotel condos, convention center, retail, restaurant
Marriott TimberLodge Phase 2	4100 Lake Tahoe Blvd.	56 units w/ 56 lockouts	May 2005–June 2006	Timeshare hotel
Marriott TimberLodge Phase 3	4100 Lake Tahoe Blvd.	57 units w/ 52 lockouts	August 2006–August 2007	Timeshare hotel
Embassy Vacation Resorts Phase 4	901 Ski Run Blvd.	40 units w/ 40 lockouts	Dates not Available	Timeshare hotel
Embassy Vacation Resorts Phase 5	1000 Ski Run Blvd.	Mix of hotel and retail	Dates not Available	Timeshare hotel/retail
Ski Run Shopping Center	1001 Ski Run Blvd.	1,498 m^2 (16,129 ft^2) of floor area existing, 1,980 m^2 (21,310 ft^2) after rebuild	Fall 2006–Summer 2008	Demo existing shopping center and rebuild larger center with retail and restaurant
Sierra Shores	3369 Lake Tahoe Blvd.	20 units	May 2005–May 2006	Timeshare
Genasci Dental	2867 Lake Tahoe Blvd.	218 m^2 (2,350 ft^2) Dentist office	May 2006	Office space

3.12.1.3 Tahoe City Public Utility District Projects

The Tahoe City Public Utility District was contacted regarding known projects within the Program project vicinity (Beckman 2006). The boundaries of the district extend from Emerald Bay to Dollar Hill, and along the Truckee River to the Nevada County line. The following are all

approved and proposed Tahoe City Public Utility District projects within the cumulative effects study area.

Westshore Trail

During the next several years, the Tahoe City Public Utility District will complete the Westshore Trail and finalize planning and begin construction on trail extensions from Sugar Pine State Park to the Meeks Bay campground. The project includes the construction of a 1.1 km (0.6 mile) Class 1 bicycle lane that will parallel SR 89. An additional extension of the Westshore Trail is proposed for Homewood, consisting of a 1.5 km (0.9 mile) Class 1 bicycle lane from Cherry Street to Fawn Street. An additional 1.5 meter (4.9 foot) extension to the exiting pedestrian path is also proposed.

Waterline Replacement

The Tahoe City Public Utility District will construct a 1.5 km (0.9 mile) long waterline just within the roadway of McKinney Drive in Homewood. The approved project is set to start construction in 2006.

3.12.1.4 South Tahoe Public Utility District Projects

The South Tahoe Public Utility District was contacted regarding known projects within the Program project vicinity (Donovan 2006). The service area of the district includes portions of El Dorado County in the Tahoe Basin, SR 89 north to Cascade Lake, SR 89 south to Luther Pass, US 50 east to the Nevada state line, and US 50 west to Echo Lake. The following projects are within this service area in South Lake Tahoe.

Bayview Wellhouse Control Building

This approved project includes upgrading an existing wellhouse at 701 San Francisco Avenue in South Lake Tahoe.

Bayview Waterline

The approved Bayview Waterline project includes the installation of 1,170 meters (3,840 feet) of waterline within the shoulders of several city streets in the Al-Tahoe neighborhood of South Lake Tahoe. The project also includes the construction of new fire hydrants and one new well.

US 50 Waterline Replacement Reno Avenue to Meeks Campground

This approved project includes the installation of approximately 1,634 meters (5,361 feet) of new waterline on US 50 in South Lake Tahoe.

Al-Tahoe Waterline

This approved project includes the upsizing of approximately 1,370 meters (4,495 feet) of new waterline in the Al-Tahoe neighborhood of South Lake Tahoe.

3.12.1.5 TRPA EIP Projects

Table 3.12-2 summarizes EIP projects and programs identified for the Program project vicinity. Details about each proposed EIP project are available in the TRPA's most recent 5-year EIP Update (TRPA 2001).

Table 3.12-2
TRPA EIP Projects in the Cumulative Impacts Study Area

Threshold Program	Project Name	EIP Project No.
Air Quality/ Transportation	Class Two: SR 89/US 50 to Basin Boundary	749
	Lakeside Bike Trail	763
	Class Three: SR 89 Cascade to Emerald Bay (North End)	765
	Class One: SR 89 Spring Creek to Cascade Properties	766
	Class One: SR 89 15th Street to Current Forest Service Trail	767
	Emerald Bay Trolley Service Improvements	831
	Class One: D.L. Bliss State Park to Meeks Bay	10039
	West Shore Bike Trail Extension and Improvements	10042
Fisheries	Stabilize Meeks Creek Phase I – Stream Habitat Restoration	147
	Rubicon Creek Mouth – Stream Habitat Restoration	402
	Meeks Creek Phase II – Stream Habitat Restoration	700
	Blackwood Creek Barrier Removal Phase I – Stream Habitat Restoration	883
	Habitat Restoration – General Creek Improvements	899
	Habitat Restoration – Eagle Creek Migratory 0.48 km (.3 mile)	900
	Habitat Restoration – Lonely Gulch Creek Improvements	901
	Habitat Restoration – Tallac Creek Improvements	902
	Habitat Restoration – Taylor Creek Improvements	903
	Lake Habitat Restoration – CSLT/El Dorado County	973
Recreation	Forest Service Taylor Creek Stream Profile Chamber Enhancement	510
	Sugar Pine Point State Park Day Use Improvements	861
	Marina/Site Master Plan – Camp Richardson	984
	Forest Service Campground Bearproof Retrofit	10043
	Vikingsholm Rehabilitation	10089
	New Taylor Creek Visitor Center	10094

Table 3.12-2 (Continued)
TRPA EIP Projects in the Cumulative Impacts Study Area

Threshold Program	Project Name	EIP Project No.
Scenic Resources	Scenic Road Unit #1: Tahoe Valley Improvement	82
	Scenic Road Unit #7: Meeks Bay Improvement	83
	Scenic Road Unit #9: Tahoma Improvement	84
	Scenic Shore Unit #9: Rubicon Bay Improvement	105
	Scenic Road Unit #2: Camp Richardson Improvement	503
	Emerald Bay Viaduct Scenic Restoration	608
	SR 89 Cascade Creek Area Retaining Walls	873
	Roadway Unit # 2: Camp Richardson	10001
	Shoreline Unit # 4: Taylor Creek Meadow Parking Lot Improvement Shoreline Unit	10013
	Shoreline Unit #5: Ebright-Minimize Visibility of Trail Between Eagle Pt. & Cascade Props.	10014
	Shoreline Unit # 6: Emerald Bay Roadscar Treatment	10015
	Shoreline Unit # 8: Redesign Rubicon Point Parking Area	10016
	Shoreline Unit # 12: Improve Marina Facilities At McKinney Bay	10017
Soil Conservation/ SEZ	Restore 16.2 ha (40 acres) of SEZ – El Dorado County	650
	General Creek Stream Bank Stabilization Project	936
	Meeks Bay Marina SEZ Fill Removal and Bank Stabilization	953
	Lonely Gulch	10128
Vegetation	Habitat Protection – Tahoe Yellow Cress Blackwood/County Park	976
	Tahoe Yellow Cress Habitat Protection – Baldwin Beach	977
	Habitat Protection – Tahoe Yellow Cress Meeks Bay	978
	Habitat Protection – Tahoe Yellow Cress D.L. Bliss State Park	979
	Habitat Protection – Tahoe Yellow Cress: Mouth of Edgewood Creek	980

Table 3.12-2 (Concluded)
TRPA EIP Projects in the Cumulative Impacts Study Area

Threshold Program	Project Name	EIP Project No.
Water Quality	Cascade Creek Watershed Bmp Retrofit	12
	Fallen Leaf Lake	704
	Meeks Bay Campground BMP Retrofit	711
	Rubicon/Meeks Bay Residential BMP	713
	Chambers Lodge	731
	Paradise Flat BMP Retrofit	739
	Eagle Falls	10049
Wildlife	General Creek Riparian Habitat Enhancement	604
	Meeks Creek Riparian Habitat Improvement	605
	Tallac Creek/Marsh Restoration	10044
	Wildlife Habitat Restoration at Tahoe Basin State Parks	10083

The Caltrans *Lake Tahoe Basin Environmental Improvement Program Delivery Plan* (Caltrans 2005b) has scheduled a number of Lake Tahoe EIP projects to be constructed over the next five to seven years, as shown in Table 3.12-3. Other safety and operational projects are also planned within this time frame, including rock retaining wall and slope erosion control projects near Emerald Bay on SR 89 and at Echo Summit on US 50.

3.12.2 Assessment of Cumulative Impacts

Quantifiable environmental impacts were generally not yet reported for the majority of the proposed projects located in the south to southwest areas of Lake Tahoe; however, many TRPA EIP project descriptions provided estimates of beneficial impacts. Because of this limitation, the following analysis relies on information about the known landowners, growth pressures, and projects in the area and the known plans and policies of the local jurisdictions to make a qualitative assessment regarding the significance of the proposed Program's contribution of impacts to those of other actions in the south Lake Tahoe area.

The proposed Program is designed to collect and treat the roadway stormwater runoff and rehabilitate the existing roadway and drainage system. The Program does not include features that will increase the level of service, operating speed, or capacity of the facility. The Route Concept Report for these highways indicates no plans exist for new facilities or capacity-increasing operational improvement projects for US 50 or SR 89 in the study area vicinity. In the future, US 50 and SR 89 will be rehabilitated as necessary to repair storm damage and to achieve minor operational and safety improvements as necessary. Substantial portions of the project area, along the highways, have been disturbed with homes, public facilities, and roads. These urban developments are likely to be retained in the future.

Table 3.12-3
Planned Highway-Related EIP Projects, 2005–2012

Project Location	County	Highway
Echo Summit to 1.8 km (1.1 miles) east of Echo Summit	El Dorado	50
0.3 km (0.2 mile) east of Echo Summit to Meyers Road	El Dorado	50
Meyers Road to Incline Road	El Dorado	50
Airport Road to SR 89 North "Y"	El Dorado	50
SR 89 North "Y" to Trout Creek	El Dorado	50
Trout Creek to Ski Run Boulevard	El Dorado	50
Ski Run Boulevard to State Line	El Dorado	50
Alpine County Line to US 50	El Dorado	89
US 50 to Cascade Road	El Dorado	89
Cascade Road to north of Eagle Falls Viaduct	El Dorado	89
North of Eagle Falls Viaduct to Meeks Creek	El Dorado	89
Meeks Creek to Placer County Line	El Dorado	89
Tahoe State Park to SR 267	Placer	28
SR 267 to Chipmunk Street	Placer	28
Chipmunk Street to State Line	Placer	28
El Dorado County Line to SR 28	Placer	28
Elizabeth Drive to Sugar Pine Road	Placer	28
SR 28 to Squaw Valley Road	Placer	28
Brockway Summit to 1 km (0.6 mile) south of Brockway Summit	Placer	267
1 km (0.6 mile) south of Brockway Summit to Stewart Way	Placer	267
Stewart Way to SR 28	Placer	267

Source: Caltrans 2005b

The TRPA has designated the proposed Program as a water quality EIP project. To qualify as an EIP project, the proposed Program must directly relate to a respective threshold program and contribute to the attainment of that threshold. Typically, EIP projects are intended to result in an environmental benefit. Considering the current Program within this context and the nature of the improvements, contribution to long-term (post-construction) cumulative impacts is not expected. Once Program construction is completed along or within any one segment, the Program would contribute to improved water quality runoff conditions and would not change existing traffic flow or circulation. The Program would not contribute to long-term cumulative impacts with respect to air quality or noise. Except for occasional maintenance of the proposed drainage basins and runoff drainage facilities, no further ground disturbance would take place after construction is completed. Therefore, the Program is not expected to result in long-term contributions to any cumulative effects to the physical or biological environment or to community resources.

The projects identified in Section 3.12.1 generally consist of bicycle and pedestrian paths, water quality improvement and erosion control projects, utility district improvements, and proposed residential construction at various locations, including in the Homewood and South Lake Tahoe

areas. The following discusses the potential cumulative impacts from the proposed Program and the other projects identified in Section 3.12.1.

Vegetation

All of the projects identified for this cumulative impact assessment will likely require some level of vegetation removal for site preparation. The proposed Program would require some vegetation removal as result of shoulder widening and drainage improvement activities. However, the removal of woody vegetation (trees and shrubs) would be the minimum required for construction and would occur only where trees or vegetation alongside the roadway or basin location cannot be avoided. The number, size, and location of trees to be removed as a result of Program implementation will be determined as design details are developed. The number of trees identified within the preliminary basin locations could be considered substantial for the overall Program (all eight segments). In some cases, individual basins may have to be redesigned, relocated, or eliminated to minimize or avoid removal of trees. Any proposed loss of trees should be in conformance with TRPA goals and policies (e.g., large trees may be removed for large public utilities projects if the TRPA finds there is no reasonable alternative). Overall, neither the proposed Program nor the other projects identified in Section 3.12.1 would be expected to substantially alter the species richness, relative abundance, and pattern of vegetation adjacent to US 50 and SR 89 or within the context of the larger south Lake Tahoe area.

Wildlife

The proposed Program would not cause an increase in urban growth, result in additional habitat fragmentation, alter existing connectivity between wildlife habitats along US 50 and SR 89, or cumulatively contribute to these types of impacts from other developments. The two highways already exist and are well traveled, and the Program would not change their locations or use. Potential movement of wildlife across the highways may be temporarily affected by construction activities. Considering that US 50 and SR 89 and associated development currently act as a barrier to wildlife movement, additional permanent structures that may adversely impact wildlife movement along or across US 50 and SR 89 (new roadways or highway access, right-of-way fencing, guardrails, median barriers, etc.) are not proposed as part of the Program. Although infrequent noises louder than background traffic noise may occur, it is expected that construction noise impacts would be comparable to traffic noise and should not result in significant noise-related disturbance to nesting birds, roosting bats, or other wildlife species, if present.

Similarly, the removal of vegetation adjacent to US 50 and SR 89 is unlikely to significantly contribute to adverse cumulative impacts to wildlife species, including migratory birds and special-status or management indicator species. The cumulative loss of woody vegetation caused by the Program, in combination with the losses incurred from other past, present, and potential future projects, is unlikely to result in the nonattainment of TRPA environmental threshold carrying capacities for managed wildlife species in the south Lake Tahoe area. Therefore, the removal of vegetation is not expected to result in a significant cumulative impact to wildlife.

The Program is not expected to permanently adversely impact the movement of fish and other aquatic organisms along or across US 50 and SR 89. Potential movement of aquatic organisms may be temporarily affected by construction activities such as dewatering, which may be necessary for the rehabilitation or replacement of culvert and drainage systems within the project

area. No new barriers to aquatic migration are expected to occur as a result of the proposed Program.

As previously mentioned, the proposed Program and other projects that qualify for the TRPA's EIP are intended to result in an environmental benefit and directly relate to a respective threshold program and attainment of that threshold. A number of EIP projects proposed in the south Lake Tahoe area are expected to have direct beneficial impacts to wildlife and fisheries resources. Cumulative adverse impacts to biological resources in the south Lake Tahoe area as a result of the proposed Program would be potentially offset by the cumulative beneficial impacts to biological resources from the proposed Program (water quality improvements), associated project-specific mitigation, and proposed and completed EIP projects in the south Lake Tahoe area. Table 3.12-4 summarizes EIP projects proposed in the south Lake Tahoe region that are expected to result in direct beneficial impacts to wildlife and fisheries.

Table 3.12-4
EIP Projects Beneficial to Wildlife and Fisheries Resources in the South Lake Tahoe Area

EIP Program	Project Name	EIP Project No.	Expected Environmental Benefit
Fisheries	Meeks Creek Phase II – Stream Habitat Restoration	700	10.5 km (6.5 miles) stream improved to excellent
	Habitat Restoration – General Creek Improvements	899	4.6 km (2.9 miles) stream improved to good
	Habitat Restoration – Eagle Creek Migratory	900	0.5 km (0.3 miles) stream improved to excellent
	Habitat Restoration – Lonely Gulch Creek Improvements	901	3.2 km (2.0 miles) stream improved to good
	Habitat Restoration – Tallac Creek Improvements	902	6.6 km (4.1 miles) stream improved to good
	Habitat Restoration – Taylor Creek Improvements	903	3.2 km (2.0 miles) stream improved to excellent
	Lake Habitat Restoration – CSLT/El Dorado County	973	19.4 ha (48 acres) of in-lake fish habitat restored.
	Habitat Restoration – General Creek Improvements	899	4.6 km (2.9 miles) stream improved to good
Soil Conservation/ SEZ	Restore SEZ – El Dorado County	650	16 ha (40 acres) restored
	General Creek Stream Bank Stabilization Project	936	0.4 ha (1 acres) restored
	Meeks Bay Marina SEZ Fill Removal and Bank Stabilization	953	0.2 ha (0.45 acres) restored
Vegetation	Habitat Protection – Tahoe Yellow Cress, Blackwood/County Park	976	0.04 ha (0.10 acres) protected
	Habitat Protection – Tahoe Yellow Cress, Meeks Bay	978	Not identified
	Habitat Protection – Tahoe Yellow Cress, D.L. Bliss State Park	979	Not identified
	Habitat Protection – Tahoe Yellow Cress, Mouth of Edgewood Creek	980	Not identified

Table 3.12-4 (Concluded)
EIP Projects Beneficial to Wildlife and Fisheries Resources in the South Lake Tahoe Area

EIP Program	Project Name	EIP Project No.	Expected Environmental Benefit
Water Quality	Lower Ward Valley/Pineland Ecp	219	5.1 km (3.2 miles) stream improved
	McKinney Tract	558	Not identified
	Fallen Leaf Lake	704	Not identified
	Meeks Bay Campground BMP Retrofit	711	Not identified
	McKinney II	727	1.3 ha (3.3 acres) improved
	Chambers Lodge	731	10.6 ha (4.3 acres) improved
	Paradise Flat BMP Retrofit	739	Not identified
	SR 89 South Lake Tahoe "Y" to Placer County Line	995	Not identified
	Ward Gullies	10048	Not identified
	Eagle Falls	10049	Not identified
Wildlife	General Creek Riparian Habitat Enhancement	604	161.9 ha (400 acres) improved
	Meeks Creek Riparian Habitat Improvement	605	0.6 km (1 mile) stream improved to excellent
	Tallac Creek/Marsh Restoration	10044	1.2 ha (3 acres) improved
	Wildlife Habitat Restoration at Tahoe Basin State Parks	10083	20 ha (50 acres) improved

SEZs and Jurisdictional Waters of the United States, Including Wetlands

The disturbance of SEZs and areas of jurisdictional waters of the United States, including wetlands, due to Program implementation shall be the minimum required for construction. Most Program features (detention and infiltration basins, sand traps, etc.) were designed to avoid impacts to SEZ areas.

Although the TRPA restricts activities that disturb SEZ areas, public service facilities (including highways and their associated facilities) are permissible uses in SEZs under certain conditions; however, mitigation must be provided for adverse impacts to lower land classifications, including SEZs. By implementing the required mitigation, the Program would result in a net gain in restored or improved naturally functioning SEZ coverage. This gain in SEZ coverage shall also be considered cumulative to other EIP stream and meadow restoration and improvement projects listed in Table 3.12-4. Furthermore, the quality of waters entering SEZ and jurisdictional water systems in the south Lake Tahoe area would be improved as a result of the proposed Program.

Traffic-Related Cumulative Impacts

The US 50 and SR 89 EIP projects would require temporary construction activities that will affect traffic flow and patterns. Other projects proposed for construction along the highways, such as the Tahoe City Public Utility District's Westshore Trail bike lane (along SR 89), South Lake Tahoe Public Utility District's waterline replacement (US 50), and the Sawmill Bike Path, have the potential to overlap in time and place with the proposed Caltrans EIP projects. Caltrans also plans a number of other safety and operational projects during this time frame, including

rock retaining wall and slope erosion control projects near Emerald Bay on SR 89 and at Echo Summit on US 50.

In addition to the projects listed in Table 3.12-3, several other EIP agency projects in California and Nevada are expected to occur in conjunction with this project. For example, the Incline Village Improvement District and the Nevada Department of Transportation have scheduled sewer line and road rehabilitation projects during the same time frame as major Caltrans construction projects.

Cumulative community impacts related to these projects could include temporary road closures and traffic delays, acquisition of rights-of-way and adjacent property parcels, and land use changes. These impacts may impair traffic circulation and access to local businesses, commercial and tourist destinations, public recreational areas, and private residences.

As discussed previously, the Lake Tahoe regional economy relies heavily on tourism and recreational users. Cumulatively, the EIP and other construction projects may have a significant adverse impact on local and regional economies if primary transportation routes are closed or impaired for a substantial amount of time, restricting visitors' access to local businesses, resorts, and recreational areas. However, these impacts could be avoided through coordination and scheduling with the local utility districts and public works agencies responsible for these projects.

Caltrans has developed a draft Lake Tahoe Basin Regional Traffic Management Plan (TMP) that outlines time frames for construction of its road projects to minimize cumulative construction-related impacts. Implementation of the Regional TMP (Section 3.12.3) would reduce the cumulative impacts of the Program to less than significant.

3.12.3 Avoidance, Minimization, and Mitigation Measures

The following measures will be applied to each segment or project when it is advanced for design.

Lake Tahoe Basin Regional Traffic Management Plan

A draft Lake Tahoe Basin Regional TMP was developed as part of the overall EIP project. The Regional TMP addresses cumulative construction-related impacts from the multiple Caltrans projects in the Lake Tahoe Basin as well as those from the Nevada Department of Transportation and other EIP agencies. In addition, project-specific TMPs will be developed during the final design phase of each project.

TMPs outline construction requirements and restrictions to minimize traffic delays and maximize safety within the construction areas. In general, TMPs develop strategies for public and motorist information, incident management, construction, demand management, and alternate routes. For example, a construction season map will be published each year to inform the public, local businesses, and local agencies of project locations and activities.

Other requirements may include the following, as appropriate:

- During the peak summer travel season between July 1 and Labor Day, no lane closures will be allowed after noon on Fridays, or on weekends or holidays during this period. Work planned off of the highway travel lanes that does not impede normal traffic flow would not be subject to this restriction.

- Lane closure charts will be developed for each segment or area of work to address any planned temporary lane changes or closures. These charts and schedules will be made available for public notification and information.
- Lane closures will be limited to 1 km (0.6 mile) in length or less.
- Maximum delays caused by a single closure will be limited to 10 minutes for construction projects and 15 minutes for maintenance work. The cumulative delay for a given corridor will be limited to 30 minutes.
- Bicycle and pedestrian access will be maintained through the construction zone whenever possible and as appropriate.

Recreational Land Use

Construction activities may disturb some recreation users at sensitive land uses such as parks, trails, beaches, campgrounds, and similar publicly accessible facilities. The following measures may be applied as appropriate:

- Prior to construction, information on the activities, location, type of potential disturbance, and how it might affect recreation access or use should be noticed, advertised, or otherwise made publicly available so that users of the sites are aware and can plan accordingly.
- Construction activities in the vicinity of noise-sensitive uses such as campgrounds shall be restricted to daytime hours.

Public and Private Property Access

Access to a property, driveway, or access road along the highways shall not be blocked unless the occupant of the property (or responsible party) has been notified. Where access during the day may be impracticable during active construction, it will be provided by the end of each working day. Notification shall be made prior to commencing any construction work that could affect property access.

Public Involvement Plan

The Lake Tahoe Basin has a unique and complex socioeconomic environment. Due to the potential cumulative construction-related impacts of the EIP, it will be necessary to inform the public of construction activities and to involve them in Caltrans planning efforts to ensure that project impacts will be minimized.

Caltrans will develop a Public Involvement Plan based on the draft Tahoe Basin Public Communications and Outreach Guidelines. These guidelines outline ways to coordinate public involvement with other agencies, identify interested stakeholders, and suggest strategies for public outreach and communication.

The guidelines describe several different strategies for public communication and outreach, including coordination with local agencies, public meetings and events, membership on boards, outreach at schools, and one-to-one meetings with stakeholders. Caltrans media communication may involve television and radio service announcements, newspaper articles, local newsletters, a website, and direct mailings.

This section briefly discusses greenhouse gases and climate change, and the State's goals and actions to address potentially contributing emissions. As noted in previous sections in this EIR, and the conclusion to this section, this project would not increase or change long-term traffic capacity, and should have no or minimal effects related to this issue.

Climate change has been a concern since at least 1988, as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC). Greenhouse gas emissions (GHG) reduction and climate change research and policy have increased dramatically in recent years. In 2002, with the passage of Assembly Bill 1493 (AB 1493), California launched an innovative and proactive approach to dealing with GHG emissions and climate change at the state level. AB 1493 requires the California Air Resources Board (CARB) to develop and implement regulations to reduce automobile and light truck GHG emissions; these regulations will apply to automobiles and light trucks beginning with the 2009 model year.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: 1) 2000 levels by 2010, 2) 1990 levels by the 2020 and 3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-17-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

According to a recent white paper by the Association of Environmental Professionals,[9] "an individual project does not generate enough greenhouse gas emissions to significantly influence global climate change. Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of greenhouse gases."

Caltrans and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human-made GHG emissions are from transportation, the Department has created and is implementing the Climate Action Program at Caltrans (December 2006). One of the main strategies in the Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of carbon dioxide from mobile sources, such as automobiles, occur at stop-and-go speeds (0 to 25 miles per hour [mph]) and speeds over 55 mph.

Caltrans recognizes the concern that carbon dioxide emissions raise for climate change. However, modeling and gauging the impacts associated with an increase in GHG emissions levels, including carbon dioxide, at the project level is not currently possible. No federal, state, or regional regulatory agency has provided methodology or criteria for GHG emission and climate

[9] Hendrix, Michael and Wilson, Cori. Recommendations by the Association of Environmental Professionals (AEP) on How to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents (March 5, 2007), p. 2

change impact analysis. Therefore, Caltrans is unable to provide a scientific or regulatory based conclusion regarding whether the project's contribution to climate change is cumulatively considerable.

Caltrans continues to be actively involved on the Governor's Climate Action Team as CARB works to implement AB 1493 and AB 32. As part of the Climate Action Program at Caltrans (December 2006), the Department is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high-density housing along transit corridors. Caltrans is working closely with local jurisdictions on planning activities; however, Caltrans does not have local land use planning authority. Caltrans is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars and light- and heavy-duty trucks. However, it is important to note that the control of the fuel economy standards is held by the United States Environmental Protection Agency and CARB. Lastly, the use of alternative fuels is also being considered; Caltrans is participating in funding for alternative fuel research at the University of California, Davis. The projects for this EIR are all water quality projects and will have no effect on greenhouse gas emissions. Therefore, no minimization or mitigation measures are required.