

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

This section evaluates the environmental resource areas potentially affected by the proposed project and presents measures to avoid or minimize those impacts. The environmental resource discussions presented in this chapter are based on the technical studies cited at the beginning of each discussion and listed in Chapter 7. Avoidance and minimization measures are summarized in Appendix G. The technical studies are 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.

As part of the scoping and environmental analysis for the project, the following environmental issues were considered but no adverse impacts were identified. Consequently, these issues are not discussed further.

- **Growth:** The proposed project is limited to improvements necessary to meet NPDES permit requirements and elements of the Lake Tahoe Basin EIP that relate to this segment of SR 89. No changes would be made to the highway that could affect through-traffic or change access to any land or parcels. These actions would not add additional infrastructure or change highway levels of service, and therefore would not change or induce growth or development. None of the improvements proposed would remove any existing barriers to growth. As a result, the project would have no impact on growth.
- **Energy:** Permanent traffic conditions will not be affected by the project, as there will be no changes in capacity, operation, or circulation. Consequently, there would be no change in the consumption of energy with or without the project. Temporary construction may result in some traffic delays and increased inefficiency but the effect is considered minor in terms of overall energy consumption.
- **Relocation:** No housing units or commercial businesses would be acquired or relocated as a result of this project.
- **Utilities:** No overhead utilities exist along this segment of SR 89. An underground South Tahoe Public Utility District forced (pumped) wastewater main parallels SR 89, but surface location markers for this pipeline indicate that

it is offset from the highway. All utility locations in the immediate vicinity of construction will be determined during final design of the project. Major relocations of utilities are not anticipated. The contractors will be required to maintain continuous utility service during construction, and no disruption of service is anticipated. The project would have no or minimal impact on utility service.

- Seismicity: The project would not expose people or structures to adverse effects from fault rupture, seismic ground shaking, or seismic-related ground failure.
- The project does not occur within or adjacent to the following land uses or resources: farmland, an airport, a wild or scenic river, the state Coastal Zone, or an area of known or important mineral resources. Therefore, the project would have no affect on these resources.

Human Environment

Sections 2.1 through 2.4 present the existing conditions; potential impacts from the proposed project; and avoidance, minimization, and/or mitigation measures related to land use, the community, emergency services, and traffic in the project vicinity. The following discussions are based on the Community Impact Assessment prepared for this project.

The regional study area for community impacts is the South Lake Tahoe Census County Division, which encompasses the residential, commercial, government services offices, and recreational areas along SR 89 within the project limits and along US 50 in South Lake Tahoe and Meyers. This division includes the year 2000 Census Tract 305.01.

Direct project effects have the potential to occur within the existing state right-of-way as well as construction easements and locations where minor acquisition of parcels or portions of parcels may be needed for proposed drainage improvements that extend outside of the existing right-of-way.

2.1. Land Use

2.1.1. Affected Environment

2.1.1.1. Existing and Future Land Use

In the region surrounding the project (the South Lake Tahoe to Luther Pass area), land uses are dominated by Forest Service lands managed for forestry, watershed areas, recreational uses, visitor and residential housing, commercial services, and government and utility services. There are no State Park lands within the project limits.

Within the project study area, the community of Meyers contains the most concentrated residential and commercial development. Meyers is the first community encountered by travelers descending from the steep grade of US 50 below Echo Summit. The unincorporated community lies at the northwestern end of the project study area, near the SR 89/US 50 intersection and just south of the city of South Lake Tahoe. Meyers has mostly single-family (one unit per parcel) residential lots for vacation and year-round housing. Commercial development in Meyers is primarily along US 50 and consists mostly of overnight accommodations and some retail goods and services for the surrounding population and highway travelers.

2.1.1.2. Consistency with Federal, State, Regional and Local Plans

This segment of SR 89 is within the Tahoe Valley unit of the LTBMU. A resource management emphasis for this unit included in the *Land and Resource Management Plan* (Forest Service 1988) is on meeting the recreation and scenic use demands of the resident and visiting population of the area. Along SR 89, there is an emphasis on maintaining a scenic travel corridor.

TRPA's *Regional Plan for the Lake Tahoe Basin* (TRPA 1987) identifies environmental threshold carrying capacities to protect and enhance the quality of Lake Tahoe and other natural resources in the region. A key goal of the plan is to reduce sediment, nutrient, and other pollution 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.

TRPA has defined Plan Area Statements (PASs) throughout the Tahoe Basin that describe each planning area, include planning statements and considerations, and list special policies and details about permitted uses. The following summarizes the four

planning areas crossed by the project and the permissible transportation uses identified in each area's PAS:

- The Meyers Community Plan (PAS #125) describes Meyers as a community and as a gateway to the Lake Tahoe region. The PAS includes objectives to improve water quality through implementation of Best Management Practices (BMPs) and improvements to SEZ lands along US 50 and SR 89. The PAS lists transportation routes as permissible uses.
- The Christmas Valley Plan (PAS #137) area is located south of Meyers and extends along the Upper Truckee River area. The primary land use is classified as residential. The PAS lists SR 89 as a scenic corridor and identifies transportation routes as permissible uses.
- The Luther Pass Plan (PAS #141) area serves as access to trailheads north and south of SR 89 and the Grass Lake area. The PAS lists SR 89 as a scenic corridor and identifies transportation routes as permissible uses. Planning considerations state that improved parking along the SR 89 should be provided.
- The Freel Peak Plan (PAS #121) area, which borders portions of SR 89, is classified for conservation. Although transportation routes are not listed as permissible uses, the existing SR 89 corridor/right-of-way is shown in the PAS maps. Planning considerations include trails and trailhead parking improvements for dispersed recreational opportunities.

In addition, there are two TRPA thresholds for recreation:

- 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 shore zone 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 shore zone 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.

2.1.1.3. Park and Recreation Uses

The economic base of the Lake Tahoe region is tourism and recreation. SR 89 is an important regional transportation corridor linking many communities and services that are outside of the project area, including South Lake Tahoe and recreational uses

in Alpine County such as the Kirkwood ski area, and hiking and cross country skiing at the Carson Pass and Hope Valley areas. Within the project limits, the Tahoe Rim Trail crosses SR 89 about 5 miles south of Meyers, and the nearby Big Meadow trailhead includes a parking lot for trail users. A segment of the Tahoe Rim Trail also approaches SR 89 near Luther Pass. Grass Lake is near SR 89 near Luther Pass and is accessible from the highway for hiking and cross-country skiing.

2.1.2. Impacts

SR 89 is a main thoroughfare for the residents and businesses of Meyers, as well as the regional access road for destinations south of the community. The proposed project would have no permanent effects on land use planning or the community of Meyers; however, temporary effects due to disruptions and delays can be expected during construction.

Long-Range Planning

The project is consistent with plans developed by the Forest Service, South Lake Tahoe, Meyers, El Dorado County, and TRPA. These plans share the common goal of water quality protection and improvement in the Lake Tahoe Basin. The project will include measures outlined in Section 2.5.4 to avoid or minimize effects to the scenic qualities along this corridor. No long-range planning impacts would occur.

Economic Conditions

No commercial development exists directly along SR 89 within the project limits, although commercial and government services offices are located along local roads (e.g., Keetak Street and Shakori Drive) that are just off SR 89 near its intersection with US 50 in Meyers. Traffic associated with the public services and any businesses that rely on regional travel along this route may experience temporary effects from construction-related traffic delays, as discussed earlier in this section. However, as construction activities proceed along the highway, any single location within the project segment will only be affected for a limited amount of time. Traffic access through the planned construction areas, though potentially periodically delayed, will remain available.

Recreation Use

The Tahoe Rim Trail crossing of SR 89 will not be permanently affected by the project. If necessary, minor temporary rerouting of the trail crossing will be incorporated into the construction staging plans if needed to ensure safety of trail users. Roadside pullouts along this segment, some of which are used by hikers and

skiers, will remain the same or may be slightly enlarged or paved, and approximately 21 new roadside pullouts will be installed. Construction staging and paving may require temporary closure of some existing pullouts, resulting in potential construction-related impacts to recreationists. However, given the number of pullouts available on SR 89 within this segment, access for recreational use of the adjacent forest lands should remain available during construction.

TRPA Considerations

Consistency with Local and Regional Plans

No inconsistencies with long-range TRPA land use plans are identified.

The project does not conflict with the four TRPA PASs that cross or are adjacent to SR 89 within the project limits, and would not expand or intensify any existing non-conforming use. The Meyers, Christmas Valley, and Luther Pass PASs identify transportation routes as permissible uses, and this project will have no effect on this current designation. Although the Freel Peak PAS does not list transportation as a permissible use, SR 89 already parallels this planning area. This water quality improvement project will not change the location or capacity of the highway and will improve roadside parking, which is an objective of the Luther Pass and Freel Peak PASs.

The project will not result in a decrease or loss of high-quality natural areas for outdoor recreation or access to those areas. Therefore, the project is consistent with TRPA Thresholds R1 and R2.

TRPA Transfer of Land Coverage

According to Chapter 20.3.B(8) of the TRPA Code of Ordinances, transfer of land coverage for water quality control facilities may be permitted under certain circumstances, including when a project affects the minimum land coverage necessary. Elements of the proposed project such as pullout construction and shoulder widening are necessary elements of the project, but will create new impervious surfaces that are not exempt from the Bailey land coverage limits (Section 2.9.3). The total surface area is minimal and will be determined once final coverage areas are defined and TRPA performs the Coverage Verification. This verification will be 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.

2.1.3. Avoidance, Minimization and/or Mitigation Measures

Avoidance and minimization measures for potential impacts related to temporary, periodic travel delays during construction are addressed in Section 2.4.4.

LU-1 Recreation Use

During construction, pedestrian access across SR 89 will be maintained for users of the Tahoe Rim Trail. To minimize disturbance to trail users, information on the activities, locations, and types of potential changes and potential effects on recreation access or use will be posted, advertised, or otherwise made publicly available prior to construction. Coordination and advance notification will be provided to the public or representative user groups and the Forest Service.

2.2. Community Impacts

2.2.1. Regulatory Setting

Under CEQA, consideration of economic and/or social changes only occurs when they result in a physical change to the environment (CEQA Guidelines Sections 15064(f) and 15382).

2.2.2. Affected Environment

Community development within the project limits occurs only in the Christmas Valley area, between approximately the SR 89/US 50 junction in Meyers and the SR 89/Grass Valley Road intersection, a distance of about 2.5 miles. The Christmas Valley community developed primarily between 1970 and 1990. Within this community, properties nearest SR 89 are single-family homes, built along secondary roads that are set back from and parallel to SR 89. Most homes do not have driveway access to SR 89. There are no retail services or stores along this segment of SR 89, but adjacent streets to the east (Kaska and Keetak Streets) have some self-storage facilities, fire and emergency response stations, and local and state public services.

2.2.3. Impacts

SR 89 will follow the same alignment and serve the same function following project construction. The project has been designed to avoid any impacts to housing or buildings, and consequently no residential or business relocations are necessary.

Construction and maintenance of some proposed facilities, such as the new infiltration basins, would require minor acquisition of property or easements. Parcels where easements or right-of-way acquisition is needed have been identified as U.S. Forest Service and El Dorado County property. These parcels are not developed or improved, or are encroachments into county road right-of-way. Portions of parcels needed for basin construction along SR 89 Segment 1 are generally located in the following areas: 1) in the vicinity of Grass Lake; 2) about 2,400 feet north of the entrance road to the Big Meadow Trailhead; 3) 1,400 feet south of Grass Lake Road; 4) at Christmas Valley Road; 5) and 1,200 feet north of North Santa Claus Road. Additional, relatively minor encroachments to County right-of-way are needed in the Christmas Valley area, but none of these encroachments would affect the continued use of the existing county roads. The total (preliminary) area of acquisitions or easements is estimated at approximately 16.5 acres. Compensation for any property acquisition would be based on fair market value, and no adverse environmental impacts are identified associated with acquisition.

The project may cause intermittent traffic delays in the limited area of active construction. These delays could affect individual residents within the project limits as well as community institutions such as schools and local agencies

In addition, construction activities may occur in close proximity to properties, driveways, and access roads, potentially causing temporary, minor disruptions to residents, owners, or occupants in those areas.

TRPA Considerations

There are no established TRPA thresholds directly related to community impacts, population or housing. The TRPA Initial Environmental Checklist (Appendix C) addresses housing in item 12 and public service impacts in item 14. This project will not alter the composition of housing or result in the need for changed or new schools or government services in the area, so there will be no impact.

2.2.4. Avoidance, Minimization and/or Mitigation Measures

The following describes community planning and coordination measures to avoid or minimize temporary and/or intermittent construction impacts to the community. Additional measures are discussed in Section 2.4.4.

CI-1 Public Outreach

To provide public and motorist information on the project activities, a public involvement plan will be prepared and implemented that provides for communication and outreach measures specific to this segment of SR 89. Information will be provided to potentially affected institutions in the local area, such as school districts and local agencies, and, if appropriate, the plan will provide for public informational meetings, events, and specific stakeholder coordination to notify and coordinate with the public about construction activities that might affect the community.

CI-2 Public and Private Property Access

Access to a property, driveway, or access road along SR 89 will remain at least partially open during construction. Notification to occupants (or responsible parties) will be made whenever a property would be directly affected by construction activities.

2.3. Emergency Services

2.3.1. Affected Environment

The Lake Valley Fire Protection District, based in Meyers, has jurisdiction over the unincorporated areas of El Dorado County within the project area. The district extends from the Alpine County line 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 Forest Service provides fire protection for the National Forest lands within and around the project area. The Lake Valley Fire Protection District and the Forest Service have stations on Keetak Drive in Meyers, near the intersection of US 50 and SR 89.

Police protection is provided by the California Highway Patrol and the El Dorado County Sheriff (Caltrans 2003b).

No medical services facilities are located along this segment of SR 89. The nearest medical service center is Barton Memorial Hospital, located in South Lake Tahoe near the northern “Y” intersection of US 50 and SR 89 (Barton HealthCare 2006).

2.3.2. Impacts

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. Project-related construction activities and related effects on traffic are expected to have minimal effects on emergency services.

TRPA Considerations

The project would not affect fire, police, or other emergency services as these vehicles will be allowed through any construction area. The Lake Valley Fire Protection District and the Forest Service stations on Keetak Drive in Meyers will be able to continue to access SR 89 and US 50.

2.3.3. Avoidance, Minimization and/or Mitigation Measures

As emergency vehicles will be allowed passage through any construction zone, no additional avoidance, minimization, and/or mitigation measures are proposed.

2.4. Traffic and Transportation Facilities

2.4.1. Regulatory Setting

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

The CEQA Checklist (see Appendix B) includes potential issues that could lead to a significant impact pursuant to CEQA. Potential issues include substantially increasing traffic relative to existing load and capacity; exceeding a Level of Service (LOS) standard; changing air traffic patterns; substantially increasing hazards; resulting in inadequate emergency access, resulting in inadequate parking capacity; or conflicting with adopted alternative transportation plans, policies, or programs.

Caltrans is committed to carrying out the 1990 Americans with Disabilities Act by building transportation facilities that provide equal access for all persons. The same degree of convenience, accessibility, and safety available to the general public will be provided to persons with disabilities.

2.4.2. Affected Environment

2.4.2.1. Traffic

SR 89, a rural two-lane highway, is one of a limited number of routes providing access to and from the Lake Tahoe Basin. At the intersection with US 50 in Meyers, SR 89 had a northbound/westbound annual average daily traffic (AADT) count of 4,400, with a peak-month average daily traffic count of 6,000 in 2006. At Luther Pass, the single-direction AADT in 2006 was 2,700, with a peak-month average daily traffic count of 3,400. The one-hour peak periods at Luther Pass and South Upper Truckee Road (near the southern extent of Christmas Valley) were 440 and 620 vehicles per hour, respectively (Caltrans 2007b). The low peak hourly volumes are indicative of the relatively uncongested (free-flow) conditions along this highway, with the exception of the SR 89/US 50 intersection.

2.4.2.2. Transit and School Bus Service

There is no regularly scheduled county bus service outside of South Lake Tahoe, and no scheduled transit lines use SR 89 within the project limits.

The Lake Tahoe Unified School District (LTUSD) serves seven elementary, middle, and high schools, including one elementary school in Meyers (LTUSD 2006). The school district provides bus service within the project area, and several routes serve residences along or near this segment of SR 89, including routes 6, 22, and 26 (depending on the time of day and grade level served) (LTUSD 2006). The bus routes serving local streets off of SR 89 in the immediate project area connect to Lake Tahoe Environmental Science Magnet School, Tahoe Valley Elementary School, South Tahoe Middle School, and South Tahoe High School. The school bus system requires that school children be picked up and left off at a place that is at or near a regular stop so that they may proceed safely (Caltrans 2004).

2.4.2.3. Access/Circulation and Parking

There are numerous existing roadside shoulders and pullouts along this segment of SR 89, both paved and unpaved, that can be used for parking. These pullouts are visible on the maps in Appendix A. A formal paved parking area is located at the Big Meadow Trailhead (see Section 2.1.1.3); access to this parking area is located at approximately PM 3.24. Although many pullouts are along the southbound lane on the uphill side of SR 89, there are no public parking signs or designated public parking areas along the entire segment (except for the Big Meadow Trailhead parking lot) that identify restrictions or availability.

2.4.2.4. Bicycle and Pedestrian Facilities

There are no designated bicycle or pedestrian facilities on SR 89 between US 50 and Luther Pass (meaning there are no Class I, II, or III bicycle facilities or pedestrian paths).

2.4.3. Impacts

Traffic flow and access to existing parcels will not be permanently affected by this project. Temporary lane and road closures will be required where work is to be performed near or within traffic lanes. To expedite the construction process, temporary lane and road closures may also be required to provide work space and road access for construction activities.

Temporary effects from traffic delays will be caused by the lane closures. Wherever possible, at least one lane in each direction will remain open. This may be achieved by using temporary lane width reductions where two-way traffic will be slowed. If available, wide highway shoulders may also be used as temporary travel lanes. However, where work must occur within or near a travel lane and alternative lanes are unavailable, temporary full lane closures may be necessary. Under these circumstances, traffic will be temporarily stopped in one or both directions and traffic will move in alternating one-way directions until the lane can be safely reopened. The location of necessary lane closures at any given time will shift as work progresses.

Construction may inconvenience communities such as Meyers, Hope Valley, and the Kirkwood area by creating traffic delays and temporarily impeding access to and from SR 89. Worst-case traffic delays have the potential to induce some drivers to seek alternate routes through neighborhoods in the Meyers area to avoid construction congestion on SR 89. For example, Blitzen Road parallels SR 89 for approximately 1.5 miles in Meyers, where it passes through a residential area. If traffic diverts along this road, it would have a temporary effect on local residents.

There is an unknown potential for temporary effects from delays to school bus service when or if construction activities overlap in location and time with bus schedules. Delays in any one location would be temporary, as the active work area would shift as construction is completed.

The project will not adversely affect or change bicycle use on SR 89. However, bicyclists may experience temporary effects related to potential intermittent delays during construction as discussed above. Shoulders where drainage facilities are

constructed will be widened if practicable. Continuous bicycle lanes are not proposed as part of this water quality improvement project.

TRPA Considerations

The project will not result in any permanent change in traffic volumes or patterns. Construction and its related staging could involve temporary use of some existing roadside pullouts, but long-term parking will be improved by paving some existing pullouts and creating new pullouts.

Bicycle facilities are neither funded for nor included in this project. Pavement will be widened along some areas of the highway where work is planned for drainage improvements, but future widening along the entire corridor will be necessary to accommodate the bicycle facilities included in TRPA planning.

2.4.4. Avoidance, Minimization and/or Mitigation Measures

Avoidance and minimization measures for temporary and/or intermittent traffic disruption during construction are described below and in Section 2.2.4.

TT-1 Traffic Management Plan (TMP)

A TMP will be developed for the SR 89 Segment 1 final design phase. The TMP outlines construction requirements and restrictions to minimize traffic delays and maximize safety within the construction areas. It will include strategies for public and motorist information, incident management, construction, demand management, and alternate routes (if available or practical). For example, a construction season map will be published each year to inform the public, local businesses, and local agencies of planned construction locations and activities. Elements of the TMP for this segment would typically include the following.

- During the peak summer travel season between July 1 and Labor Day, no lane closures would be allowed after noon on Fridays, or on weekends or holidays during this period. Work planned outside 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 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 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 construction zones whenever possible and as appropriate.
- Construction schedules and anticipated locations of construction activities will be coordinated with the local school district with regard to school bus schedules and bus stops. Every effort will be made to allow continued school bus access around construction areas to avoid or minimize delays in the daily bus schedules. If necessary, Caltrans will work with the school district to identify any temporary periods when unavoidable delays may occur, to allow the school district to temporarily adjust bus schedules.

2.5. Visual and Aesthetics

2.5.1. Regulatory Setting

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

The California Legislature created a Scenic Highway Program in 1963. Its purpose is to preserve and protect scenic highway corridors from change, which would diminish the aesthetic value of the lands adjacent to highways. The state laws governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq.

The following TRPA Thresholds apply to scenic 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 to the views seen from Lake Tahoe looking toward shore. To secure threshold attainment, all travel routes with a 1982 score 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 the 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 view shed from public recreation areas and certain bicycle trails. To secure threshold attainment, all 1993 scenic quality scores must be maintained.
- SR-4 Community Design: The community design threshold is a policy statement that applies to the built environment. Design standards and guidelines found in the Code, the Scenic Quality Improvement Program, and in the adopted Community Plans provide specific implementation direction. 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.

Additionally, TRPA has standards for Scenic Restoration within the Plan Areas Statements that exist along the project route. Project features must take these Plan Area Statements into account.

2.5.2. Affected Environment

2.5.2.1. Visual Environment

The project region is characterized by mountainous alpine terrain, typical of the Tahoe Basin. From the northern project limit at the SR 89/US 50 intersection in Meyers (elevation 6,340 feet), the project route extends from the valley floor and continues into forested upland areas with small creeks and drainages, granite outcroppings, high-elevation meadow complexes, and a distant view of Echo Summit and portions of the surrounding Desolation Wilderness. The lower-elevation section of SR 89, often referred to as Christmas Valley, is fairly level with year-round residential and commercial structures. The intersection of SR 89 and Grass Lake Road (PM 6.0) marks the approximate end of the “urban” section of the project and the beginning of the mountainous alpine terrain, which reaches 7,740 feet in elevation at Luther Pass adjacent to the Alpine County Line.

The Big Meadow Trailhead is located at approximately PM 3.3. The trailhead connects with the Tahoe Rim Trail, which crosses SR 89 at approximately PM 3.6.

2.5.2.2. TRPA Scenic Resources

The TRPA is charged with protecting Lake Tahoe and the Basin for the benefit of current and future generations. The 1980 revised Compact (see Section 1.3.2) gave TRPA authority to adopt and enforce environmental quality standards. These standards were designed to achieve desired thresholds and adopted in 1982.

Any visual impact assessment prepared for roadway projects in the Tahoe Basin must consider TRPA's Scenic Resource Inventory. The TRPA has inventoried and rated roadway segments throughout the basin to determine scenic resource values from roadway vantage points. This visual assessment has two categories: Travel Route Ratings and Scenic Quality Ratings.

The TRPA assigned each roadway unit with a numerical threshold rating based on a scoring system. Travel Route Threshold Ratings ranged from 7 (lowest) to 27 (highest). To meet the thresholds, all travel routes with a 1982 score of 15.5 (roadway) or greater must maintain those scores, and all travel routes with a 1982 score of 15 (roadway) or less must improve their scores until the threshold score is reached. Ratings of Scenic Quality for Roadway Units assessed visual features for a composite score averaging unity, vividness, variety, and intactness. Scoring was from 1 to 3, with 1 being the lowest. Both assessment scores were updated in 1988.

The proposed project limits fall within two TRPA roadway units, which are described as follows in the *Lake Tahoe Basin Scenic Resource Inventory* (TRPA 1982):

- Unit 38, Upper Truckee River; STA 254-465. 2001 Composite Threshold Score = 18, Scenic Quality Rating = 2. At Upper Truckee Road, "Highway 89 drops in the Upper Truckee River Valley, at first hugging the base of the steep eastern valley sides, then following the flattish valley floor. The upper portion provided intermittent views out across the valley from a superior observer position, although coniferous forest blocks many views. The west side of the valley dominates middleground views for drivers throughout much of the unit; the road scars and talus slopes below Meyers Grade are prominent. The lower section is characterized by long straight road tangents, with aspen pine forest, scattered housing and intermittent views toward the river and distant jagged peaks on the west side of the basin."
- Unit 39, Alpine Summit; STA 0-254. 2001 Composite Threshold Score = 24, Scenic Quality Rating = 3+. Coming from Alpine County, "Hwy 89 enters the Tahoe Basin via a low pass in the Grass Lake Creek valley. This provides

distinctive and unified views of the attractive meadow surrounding Grass Lake, and steeply enclosed by forested mountain slopes, apparently pristine. The road drops more steeply in the valley below the meadow, twisting between the valley sides and affording mainly short views of forested slopes and stream. Above Big Meadow the road skirts an open bowl, although views across and down into it are limited by roadside tree screening. At the lower end of the unit, views of undisturbed mountain peaks, rock faces and meadow with aspen are obtained.”

Design recommendations that address TRPA scenic thresholds are outlined in subsequent sections.

2.5.3. Impacts

The visual assessment primarily considers new human-made components introduced into the project site. The assumption is that replacement of an existing drainage facility in kind is not changing the environment and will not warrant discussion. Work that is anticipated, but for which exact dimensions are unknown, will be discussed in general terms.

This segment is located on a designated State Scenic Highway, where the objective is to maintain the existing visual quality and not cause this segment to degrade in scenic value. Although visual impacts would result from the project features described below, with the implementation of design features and measures to minimize harm, this project will not:

- 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 rock walls within a state scenic highway, or
- Substantially degrade the existing visual character or quality of the site and its surroundings.

Maintenance Pullouts and Other Proposed Paved Pullouts

Pullouts for maintenance vehicles will be constructed at sand collection vaults where feasible. Paved maintenance vehicle pullouts are typically 85 feet long adjacent to the roadway shoulder, 45 feet long on the “backside” opposite the shoulder, and 15.5 feet wide. Pullouts would be built to Caltrans Standard Plan requirements.

The proposed maintenance vehicle pullout locations were selected based on their proximity to highway facilities that require maintenance and would result in the least amount of site disturbance. Where possible, maintenance vehicle pullout locations will be located in existing areas that are sufficiently level and large enough to accommodate them. No retaining walls or cuts are needed for construction.

The areas designated as “paved pullouts” are currently being used as pullouts but have varied surface conditions. There are approximately 15 paved pullouts within the project limits. Paving will provide safer and more stable pullouts in all weather conditions. Pullout sizes are irregular and vary throughout the project limits.

Sand Traps

Sand traps are buried corrugated metal pipes topped by “lids” that are 95 percent to 98 percent below grade. Below the top lid is a slotted opening that collects sand that washes off the roadbed in wet weather. Highway maintenance staff periodically cleans out the corrugated metal pipes.

Sand traps are primarily underground with only a small percentage of the structure visible. Although they are a constructed feature and foreign to the surrounding environment, they are not readily visible to the traveling public. They are located below the level of the traveled way and tend to be visible only if traveling at extremely low speed or walking/bicycling along the highway shoulder. Sand traps are usually surrounded by rock slope protection.

Retaining Walls

Three locations (380, 40, and 30 feet long) along the project limits potentially need small retaining walls approximately 1 to 2 feet high. The retaining walls would be located on the uphill side of the highway and would be clearly visible. The locations are within TRPA Roadway Unit 39.

Rock-Lined Outfalls

Nine new rock outfalls of various dimensions, not to exceed 50 feet by 175 feet, will be constructed to transport water from the highway drainage system to Big Meadow, near Luther Pass. The meadow functions as a natural infiltration basin. The outfalls will be constructed of rock similar to existing rock slope protection (RSP) in the vicinity. Vegetation will be started in portions of the outfalls to produce a more natural and irregular formation.

The outfalls will have a gentle slope and range in length from 100 feet to 150 feet. Their width is expected to be between 30 feet and 50 feet. Most of the outfalls will be visible from the highway. The proposed outfalls are all within TRPA Roadway Unit 39.

Infiltration Basins

Disturbance is expected from construction of infiltration basins due to their size and potential to require tree removal. Approximately 25 to 30 basins are proposed, but the total number will be determined during final design. The smallest basin will be approximately 40 feet by 60 feet and is not expected to require tree removal. One of the largest is approximately 850 feet by 58 feet, and its proposed location contains approximately 30 trees.

Each basin will be designed specifically for its site. The basin shape will be designed to maximize infiltration and minimize tree removal. Where feasible, basins will be irregularly shaped around trees. However, if it is determined that it is not feasible to maintain the long-term health of a tree, then the tree will be removed as part of basin construction.

Biofiltration Swales

Biofiltration swales are vegetated trapezoidal or V-shaped channels that receive and convey storm water. Swales remove debris, solid particles, and pollutants from storm water by filtration through grass, sedimentation, sorption to soil or grass, and infiltration through soil. Biofiltration swales must have vegetative cover of about 70 percent for treatment to occur (Caltrans 2007c). Biofiltration swales will be designed to blend in with the existing topography with minimal grading and ground disturbance.

Slope Modifications to Accommodate Project Facilities

Some of the existing cut and fill areas along the project limits will be modified to stabilize slopes and provide additional shoulder space to accommodate drainage facilities. Slopes will be minimized to the extent possible. Rock slope protection is expected to be applied to slopes steeper than 2:1 (vertical to horizontal) and will be revegetated.

TRPA Considerations

The project will be visible from SR 89 and the Tahoe Rim Trail. No views of Lake Tahoe or other scenic vistas will be affected by the project. The project is consistent with TRPA height and design standards, the Meyers Community Plan (TRPA 1998),

and the TRPA Scenic Quality Improvement Program and Design Review Guidelines (TRPA 1989a, 1989b). The implementation of avoidance and minimization measures will reduce effects to existing views, vegetation, and terrain.

Rock outfalls and rock slope protection will have an initial moderate adverse effect on scenic vistas that will subside as the new container and seed vegetation matures and creates a more natural effect. The project will not substantially degrade the existing visual character or quality of the area and surroundings with implementation of the measures proposed in Section 2.5.4.

Each tree that must be removed to accommodate project features will be reviewed with TRPA to ensure compliance with Scenic Thresholds and Plan Area Statements and to identify additional mitigation measures that will be necessary. Regulations and guidelines outlined in Chapter 71 (Tree Removal) of the TRPA Code of Ordinances will be followed when identifying trees to be removed.

2.5.4. Avoidance, Minimization and/or Mitigation Measures

VA-1 Measures for Specific Project Components

Measures to minimize impacts associated with the following project components are listed below.

- **Sand traps.** The least visible installation that accomplishes the sand trap's function will be selected. Any rock slope protection will be revegetated and will include pine needle mulching as needed.
- **Retaining walls.** Retaining walls will be constructed from granite blocks or other stone similar in appearance. Less expensive construction components such as gabions (rocks encased in wire mesh) would be visually inappropriate and will not be used.
- **Rock-lined outfalls.** Rock slope protection for the proposed outfalls will be vegetated with forbs and trees. The rock will be similar in size, shape, material and color to indigenous rock in the vicinity. The outfall edges will be irregularly shaped for a natural appearance and may include strategically placed vegetation and clusters of boulders.
- **Infiltration basins.** Basins will be designed to minimize tree removal, and all disturbed areas associated with basin construction will be revegetated using seeding, container planting, and pine needle mulch. Logs and boulders, as appropriate, will be integrated into the basin design.

- **Slope modifications to accommodate project facilities.** Disturbed areas will be revegetated using seeding, container planting, and pine needle mulch.

VA-2 General Design and Construction Measures

- Temporary erosion control measures will be used in all disturbed areas during construction to minimize permanent impacts.
- Permanent erosion control measures will be used in all disturbed areas during construction. All finished slopes and contour-graded areas will be hydroseeded with a permanent seed mix composed of native plant species indigenous to the area. In addition, a follow-up revegetation project will install containerized native plants to supplement seeding. Funding for a follow-up revegetation project will be included in project estimate. All native vegetation removed will be replaced according to the following ratios: 1) trees – 1 liner plant for every 1 inch in diameter at breast height removed, 2) shrubs – 2 liner plants for every shrub over 2 feet removed, and 3) grasses and forbs – replace at a rate determined by the Landscape Architect.
- All small trees, tree limbs, shrubs and other woody debris generated during clearing and grubbing operations will be chipped and stockpiled for future use as erosion control and in areas designated for revegetation.
- During clearing and grubbing operations, existing top soils will be stripped and stockpiled as part of the earthwork. Topsoils will be replaced in revegetated areas.
- All efforts will be made during the design and construction phases to minimize impacts to native vegetation and rock outcroppings. Project design will minimize cut-fill limits whenever possible to avoid unnecessary disturbance of existing terrain. Impacts to native vegetation in construction areas will be minimized wherever possible through the use of temporary fencing.
- Vegetation removal will be avoided in areas where narrow vegetative buffer strips separate adjacent properties from the road edge.
- Finished slopes will resemble the natural topography and vegetation of the surrounding area. New RSP slopes will 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 will be incorporated into RSP slopes. These areas will be planted with native vegetation.
- Finished RSP slopes will be treated with natural stains to give the rock a weathered appearance, better integrating it into the surrounding rock features.

- Water quality improvement basins will avoid the use of concrete or RSP lining. Water quality improvement ditches will be earthen or rock lined whenever possible. When possible, harsh angles and steep slopes will be avoided in constructing project features. Features will be integrated into their surroundings through the use of curvilinear forms and contour grading.
- All new drainage facilities (i.e. culverts and flared end sections) will be treated with environmentally benign stains to induce a weathered appearance that blends elements into existing landscape.

VA-3 TRPA Scenic Values

Caltrans roadway and drainage improvements will consider TRPA scenic thresholds and incorporate design elements or improvements that do not degrade current values. Scenic values will be enhanced to the extent possible within the scope of the proposed work.

2.6. Cultural Resources

2.6.1. Regulatory Setting

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

The National Historic Preservation Act of 1966, as amended, sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places (NRHP). Section 106 of National Historic Preservation Act requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation (Advisory Council) the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement among the Advisory Council, FHWA, SHPO, and Caltrans went into effect for Caltrans projects, both state and local, with FHWA involvement. The Programmatic Agreement takes the place of the Advisory Council’s regulations (36 CFR 800), streamlining the Section 106 process and delegating certain responsibilities to Caltrans.

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

Historical resources are considered under CEQA and under PRC Section 5024.1, which established the California Register of Historical Resources (CRHR). PRC Section 5024 requires state agencies to identify and protect state-owned resources that meet NRHP listing criteria. It further specifically requires Caltrans to inventory state-owned structures in its rights-of-way. Sections 5024(f) and 5024.5 require state agencies to provide notice to and consult with the SHPO before altering, transferring, relocating, or demolishing state-owned historical resources that are listed on or are eligible for inclusion in the NRHP or are registered or eligible for registration as California Historical Landmarks.

The TRPA Initial Environmental Checklist identifies issues that may be deemed significant pursuant to the TRPA Code of Ordinances. These issues include alteration of a significant archaeological or historic site, adverse effects to a prehistoric or historic building, structure or object, physical changes that would affect unique cultural ethnic values, or restriction of historic or pre-historic religious or sacred uses within the affected area.

Chapter 29 of the TRPA Code of Ordinances sets forth provisions for the protection of both known and newly discovered cultural and historical resources.

2.6.2. Affected Environment

Two Areas of Potential Effect (APEs), one for historical resources and another for archaeological resources, were defined to evaluate the presence of cultural resources in the project area and their potential to be affected by the project.

The APE for historical resources includes the right-of-way of SR 89 along Segment 1 and an Environmental Study Limit (ESL) identified as the area for potential construction impacts. Consistent with procedures for determining the study area for the “built environment,” the historical resources APE also encompasses entire parcels, except where the parcels are large and vacant.

The archaeological APE was defined to encompass all areas that might be disturbed by project construction. It represents the maximum boundary encompassing the

existing and proposed rights-of-way, the ESL, and parcels or portions of parcels outside of the right-of-way that might be acquired or used for temporary construction easements.

2.6.2.1. Records/Archival Review

Historical Resources

Records searches for this project were conducted at the North Central Information Center at California State University, Sacramento in 2005 and 2006, and sources of information were reviewed that list or cite known or potential historic properties and historical resources. These sources included the NRHP, Office of Historic Preservation Determinations of Eligibility for the NRHP, California Inventory of Historic Resources, California Historical Landmarks, and California Points of Historical Interest. Documentation pertaining to SHPO concurrence of properties previously determined eligible or ineligible for listing in the NRHP, along with the Caltrans Bridge Log Sheets for bridges in the APE, are included in the Historic Resources Evaluation Report.

Research was also conducted at the California State Library in Sacramento, Caltrans Transportation Library in Sacramento, Shields 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, and Lake Tahoe Community College Library. In March 2006, letters requesting input or knowledge about any historic properties in the APE were sent to the South Lake Tahoe Historical Society and Museum, North Lake Tahoe Historical Society, El Dorado County Historical Society, Tahoe Heritage Foundation, and Tahoe Maritime Museum.

Archaeological Resources

A California Historical Resources Information System records search was completed for the APE. The records search included a review of all recorded archaeological sites, historic structures, and other known cultural resources within the archaeological APE and the surrounding half-mile radius, as well as a review of reports for all known cultural resources studies conducted within the half-mile search radius. Other references consulted included the NRHP, California Register of Historical Resources, Office for Historic Preservation Historic Property Directory, Caltrans Bridge Inventory, California State Historical Landmarks, California Inventory of Historic Resources, California Points of Historical Interest, and historic maps.

In addition, records searches were also conducted with the Forest Service and California State Parks to determine if any additional previously recorded resources would be affected by the project. Research included cultural resources formally recorded on California Department of Parks and Recreation site records, as well as informally recorded resources identified by the Northeast Information Center, and records provided by the LTBMU.

All accessible portions of the archaeological APE were subject to intensive pedestrian survey in 2005 through 2007.

2.6.2.2. Records Search/Field Survey Results

Historical Resources

Two properties identified in the APE either required evaluation or were previously evaluated for eligibility for the NRHP. The first property consists of two segments of the Old Alpine State Highway. (Other segments of this former highway still exist, but they are outside of the APE for this project or were evaluated and determined ineligible and are not discussed.) A second property, the Big Meadow Creek Culvert, was previously studied and determined not eligible for listing in the NRHP. The evaluation of historic properties was performed in conformance with the Section 106 Programmatic Agreement and included properties built in or before 1957 (that is, properties that are more than 50 years old).

The Alpine State Highway (now SR 89 south of Meyers) was designated as a state highway in 1912 and called the Alpine-Mono Trunk Road. It generally followed the old wagon route along the west side of the Upper Truckee River in the area south of Meyers (now the South Upper Truckee River Road), then east past Grass Lake, over Luther Pass to Pickett's Junction in Hope Valley and into Woodfords and then Nevada. The new highway was part of an 82-mile section from Mono County to El Dorado County. The legislature designated other state highways in the south area of Lake Tahoe in the 1910s. A route between Meyers north to Tahoma, generally following present-day SR 89, was designated as a state highway in 1911. This 8-mile route, called the Meyer's Station to McKinney State Road, opened for vehicle traffic in 1913, connecting the existing unpaved road that had extended to Tallac from the south and a road from Tahoe City to McKinney's near Tahoma. The state improved the region's highways, including the Alpine State Highway, during the 1920s and 1930s.

In response to increased demand on the region's roadways, the Division of Highways (now Caltrans) improved highways to and around Lake Tahoe in the 1950s and 1960s. The section of the Alpine State Highway between Pickett's Junction in Alpine County and 1.6 miles into El Dorado County west of Grass Lake was realigned in 1960. The Division of Highways contracted I. L. Croft and Sons to build the new section, which bypassed a series of curved segments just east of, and at, the Alpine–El Dorado County line, up from the old junction with SR 88 near the Carson River. The new highway was also straightened and moved to the north in several places as it passed Grass Lake and moved southward near Big Meadow Creek, bypassing several switchbacks. SR 89 also was moved to the east side of the South Upper Truckee River through Christmas Valley in the mid-1960s, completing its current configuration from the Alpine County line to Meyers. The realignment included construction of the Big Meadow Creek Culvert (Bridge 25 0061).

The two remaining portions of the Old Alpine State Highway within the project APE are referred to as “Segment 1, Section 1” and “Segment 9” and are shown in Figures 2.6-1 and 2.6-2, respectively. These remaining road fragments have been determined eligible for listing in the NRHP and CRHR.

Figure 2.6-1 Portion of Old Alpine State Highway (HPSR “Segment 1, Section 1”)



Figure 2.6-2 Portion of Old Alpine State Highway (HPSR “Segment 9”)



“Segment 1, Section 1” of the Old Alpine State Highway is a portion of South Upper Truckee Road, where it departs from SR 89 at approximately PM 4.5. This property is described as representing “...an important historic thoroughfare from 1911 through the late 1950s that connected the Lake Tahoe Basin with the Carson Valley as well as other forested roads throughout the central and southern Sierra Nevada region” (Heidecker and Brown 1996).

The other segment of the old highway is an approximately 300-foot long, 17-foot-wide section of pavement that leaves the south side of SR 89 at PM 0.03 and curves east. “Segment 9” is a portion of the Old Alpine State Highway that was designated as a state highway in 1912, called the Alpine-Mono Trunk Road. This highway generally followed the old wagon route along the west side of the Upper Truckee River in the area south of Meyers (where South Upper Truckee River Road now runs), over Luther Pass, along this recorded property, to Woodfords and into Nevada.

Archaeological Resources

Archaeological resources identified within the project APE consist of groves of aspen trees that may have been carved by Basque shepherders and lithic scatters. None of the identified resources are listed in or considered potentially eligible for listing in the NRHP.

Seven aspen groves (CA-ELD-2414-H, -2415-H, -2416-H, -2417-H, -2418-H, -2482-H, and -2483-H) located within the project APE have trees that appear to be greater than 50 years in age. As such, most of the trees within each of these sites are considered to be historic.

2.6.2.3. Native American Consultation

Native American consultation for the project was completed in two rounds. A records search of the Sacred Lands File was conducted during the first round. According to the Native American Heritage Commission (NAHC), the Sacred Lands File does not list any sites that are located within the immediate project area. The NAHC provided a list of seven Native American individuals and organizations that might have information pertinent to the project, or might have concerns regarding the proposed project. Caltrans sent letters and maps to the contacts provided by the NAHC on February 24, 2006. A field visit was conducted on August 18, 2006 and August 30, 2006, with individuals who wanted additional information about the project.

During the second round of Native American consultation, the Sacred Lands File was consulted to determine if any additional information had been obtained by the NAHC. No sites were identified within the project area. This information was provided to Caltrans, and in August 2007, a second letter was sent to the individuals identified by the NAHC.

2.6.2.4. Potential for Subsurface Resources

Prehistoric archaeological sites have been documented within and around the project area, such as the Visitor Center Site near the City of South Lake Tahoe (Martin 1998)

that was primarily occupied during the early Holocene, roughly 7,500 to 10,000 years ago. Although this site did not contain buried soils, it indicates that landscapes in the project area were stable enough at various periods throughout the Holocene to preserve evidence for human occupation.

Because of the nature of episodic deposition due to flooding and stream movement, buried soils may occur adjacent to soils that do not have a buried profile, and the aerial extent is likely discontinuous. Landforms in the project area that have the potential to contain buried soils are valleys, including the floodplain and abandoned and recent stream terraces. These areas include (and are not limited to) Christmas Valley, and Grass Lake.

2.6.3. Impacts

The Old Alpine State Highway is the only property listed or determined eligible for listing in the NRHP that occurs within the historical APE that could have been affected by project construction. The segments of the Old Alpine State Highway discussed in Section 2.6.2.2 fall within the historical APE in two locations: at Luther Pass, and between Big Meadow Creek and Grass Lake Creek about 4.5 miles west of Luther Pass. Because there is a potential for project construction to affect these segments of the Old Alpine State Highway, they will be avoided (see Section 2.6.4).

The aspen groves and other archaeological resources located within the project APE have the potential to be affected by the proposed project; however, with implementation of the avoidance measures outlined in Section 2.6.4, no temporary or permanent impacts are anticipated.

TRPA Considerations

The planned avoidance of the only historic resource identified within the project limits, the Old Alpine State Highway, will prevent impacts to any known resources on TRPA or other regulatory official maps or records relating to historic resources. No other impacts pursuant to Chapter 29 of the TRPA Code of Ordinances have been identified.

2.6.4. Avoidance, Minimization and/or Mitigation Measures

CR-1 ESA Action Plan for Historic Resources

To avoid the potential for impacts to the two segments of the Old Alpine State Highway identified in Section 2.6.2.2, an Environmentally Sensitive Area (ESA)

Action Plan will be prepared in accordance with the Section 106 Programmatic Agreement. The two segments of the Old Alpine State Highway will be designated as ESAs, and that designation will be included in the project design plans (during the Plans, Specifications, and Estimates [PS&E] phase of project development). The contractor will be instructed to avoid work within the ESA, and the ESA will be marked or fenced in the field prior to construction. No adverse effects to the property should occur with application and enforcement of this measure.

CR-2 Avoidance of Archaeological Resources

To avoid the potential for impacts to the archaeological resources within the project APE, it is recommended that these sites be avoided by project activities. If project activities are proposed in the immediate vicinity, then additional research should be conducted and the site should be formally evaluated to determine its significance.

CR-3 Discovery of Archaeological Resources

No further archaeological work is necessary within the APE. Additional surveys would be required if the project changes to include areas not previously surveyed. The project does not warrant the completion of a formal discovery plan based on the absence of recorded, reported, or identified archaeological sites in and adjacent to resources during construction. If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find. TRPA will also be contacted if any cultural materials are identified during construction.

CR-4 Discovery of Human Remains

If human remains are discovered, California Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the NAHC, which will then notify the Most Likely Descendent. At this time, the person who discovered the remains will contact Jody Brown, Caltrans Environmental Branch Chief, so that Caltrans may work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of PRC Section 5097.98 are to be followed as applicable.

Physical Environment

2.7. Hydrology and Floodplains

2.7.1. Regulatory Setting

Federal, state, and local laws, regulations, and guidelines require that planning for future development and specific projects consider floodplain hazards and risks. This includes the potential planning and placement of community development within mapped 100-year flood hazard zones, and placement of structures within 100-year flood hazard areas that might impeded or redirect flood flows.

Potential significant issues identified by the TRPA Initial Environmental Checklist include potential exposure due to the project to water-related hazards such as seiches or floods.

2.7.2. Affected Environment

Surface water bodies along or near SR 89 include creeks, 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 drainage areas are present in areas of flat terrain such as at Grass Lake.

There are three major creeks or water bodies within this segment of SR 89. The adjacent water bodies include some lakes or wetlands, in particular, seasonal marsh areas within Grass Lake Creek and Big Meadows Creek, and the Upper Truckee River basin.

2.7.3. Impacts

SR 89 in the project limits passes through varying topography but in some areas the contour is relatively flat, especially parallel to the Upper Truckee River. According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps for the project area (Community Panel Numbers 06000400607, 06000400609, 06000400617, and 06000400650), the project is located within Zones “C” and “D.” Zone “C” is defined as areas of minimal flood hazard from the principal source of flood in the area and determined to be outside of the 0.2 percent annual chance floodplain. Zone

“D” is defined as areas of undetermined flood hazard where flooding is possible (FEMA 1983). The proposed project would not alter the floodplain or flows within any of the surface water resources. Moreover, the project will not affect growth within any floodplain area, as it will not change the highway location, capacity, or access to or from the highway with respect to any undeveloped area in a floodplain.

TRPA Considerations

This project is proposed to comply with TRPA’s EIP for this segment of SR 89, and its primary purpose is to improve the quality of storm water runoff. The project will result in discharge to surface waters, but effects to drainage patterns will be minor and will be limited to directing runoff into new drainage basins and other facilities. Drainage basins are intended to substantially contribute to containing runoff on-site, consistent with the TRPA criteria of containing a 20-year, 1-hour storm event.

Implementing the proposed improvements will increase the infiltration of storm water runoff into groundwater. The project will not result in water-related hazards such as seiches or floods.

2.8. Water Quality and Storm Water Runoff

2.8.1. Regulatory Setting

Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. Where multiple uses exist, water quality standards must protect the most sensitive use. The SWRCB and the Regional Water Quality Control Boards are responsible for ensuring implementation of and compliance with provisions of the Federal CWA and California’s Porter-Cologne Water Quality Control Act. Section 401 of the CWA requires water quality certification from the SWRCB or from a Regional Water Quality Control Board (RWQCB) when the project requires a CWA Section 404 permit to dredge or fill within a water of the United States.

Along with CWA Section 401, CWA Section 402 establishes the NPDES permit for the discharge of any pollutant into waters of the United States. The U.S. Environmental Protection Agency (USEPA) has delegated administration of the NPDES program to the SWRCB and nine RWQCBs. The SWRCB and RWQCB also regulate other waste discharges to land within California through the issuance of waste discharge requirements under authority of the Porter-Cologne Water Quality Act.

The SWRCB has developed and issued a statewide NPDES permit to regulate storm water discharges from all Caltrans activities on its highways and facilities. Caltrans construction projects are regulated under the Statewide Permit, and projects performed by other entities on Caltrans right-of-way (encroachments) are regulated by the SWRCB's Statewide General Construction Permit. All construction projects require a Storm Water Pollution Prevention Plan (SWPPP) to be prepared and implemented during construction.

The project area is within the jurisdiction of the LRWQCB. The LRWQCB has the authority to implement water quality protection standards through the issuance of permits for discharge to waters at locations within its jurisdiction. 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, identified as the Lake Tahoe Hydrologic Unit (LTHU), must satisfy more stringent requirements than in most other parts of the United States. In addition to LRWQCB requirements, TRPA, whose jurisdiction covers the entire LTHU, regulates environmental conditions through the TRPA Code of Ordinances. The LRWQCB regulates activities within wetlands and waters of the U.S. and TRPA SEZs.

Water quality objectives for the Lake Tahoe drainage basin apply to the Upper Truckee River and its tributaries and are specified in Basin Plan prepared by the LRWQCB. The Basin Plan establishes water quality objectives and implementation programs to meet stated objectives and to protect the beneficial uses of water in the LTHU.

TRPA is designated by California and the USEPA as the areawide water quality planning agency under Section 208 of the federal Clean Water Act. It adopted a bi-state plan entitled the *Water Quality Management Plan for the Lake Tahoe Region* (208 Plan; TRPA 1988). Most appropriate provisions of the 208 Plan, however, are incorporated into the Basin Plan.

TRPA water quality thresholds are as follows:

- WQ1: Decrease sediment load as required to attain turbidity values not to exceed 3 Nephelometric 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.

- WQ2: Average Secchi depth, December–March, shall not be less than 33.4 meters.
- WQ3: Annual mean phytoplankton primary productivity shall not exceed 52 gC/m²/yr. California: algal productivity shall not be increased beyond levels recorded in 1967–1971, based on a statistical comparison of seasonal and annual mean values.
- WQ4: Attain a 90th percentile value for suspended sediment of 60 milligrams per liter (mg/L).
- WQ5: Dissolved inorganic nitrogen, 0.5 mg/L; dissolved phosphorous, 0.1 mg/L; dissolved iron, 0.5 mg/L; suspended sediment, 250 mg/L.
- WQ6: 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.
- WQ7: For other lakes in California/Nevada, the standards are the same as the tributary standards.

For Caltrans projects, a Memorandum of Understanding (MOU) between TRPA and the LRWQCB acknowledges that LRWQCB is the lead regulator for water quality. LRWQCB water quality thresholds can be found in the Lahontan Basin Plan. The LRWQCB 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 2.0 mg/L for grease and oil.

If the project requires permits from the LRWQCB for 401 Water Quality Certification to comply with any necessary USACE or RWQCB permit, or for a discharge related to pavement cutting/grinding operations, any requirements defined in those permits will be implemented as part of the project.

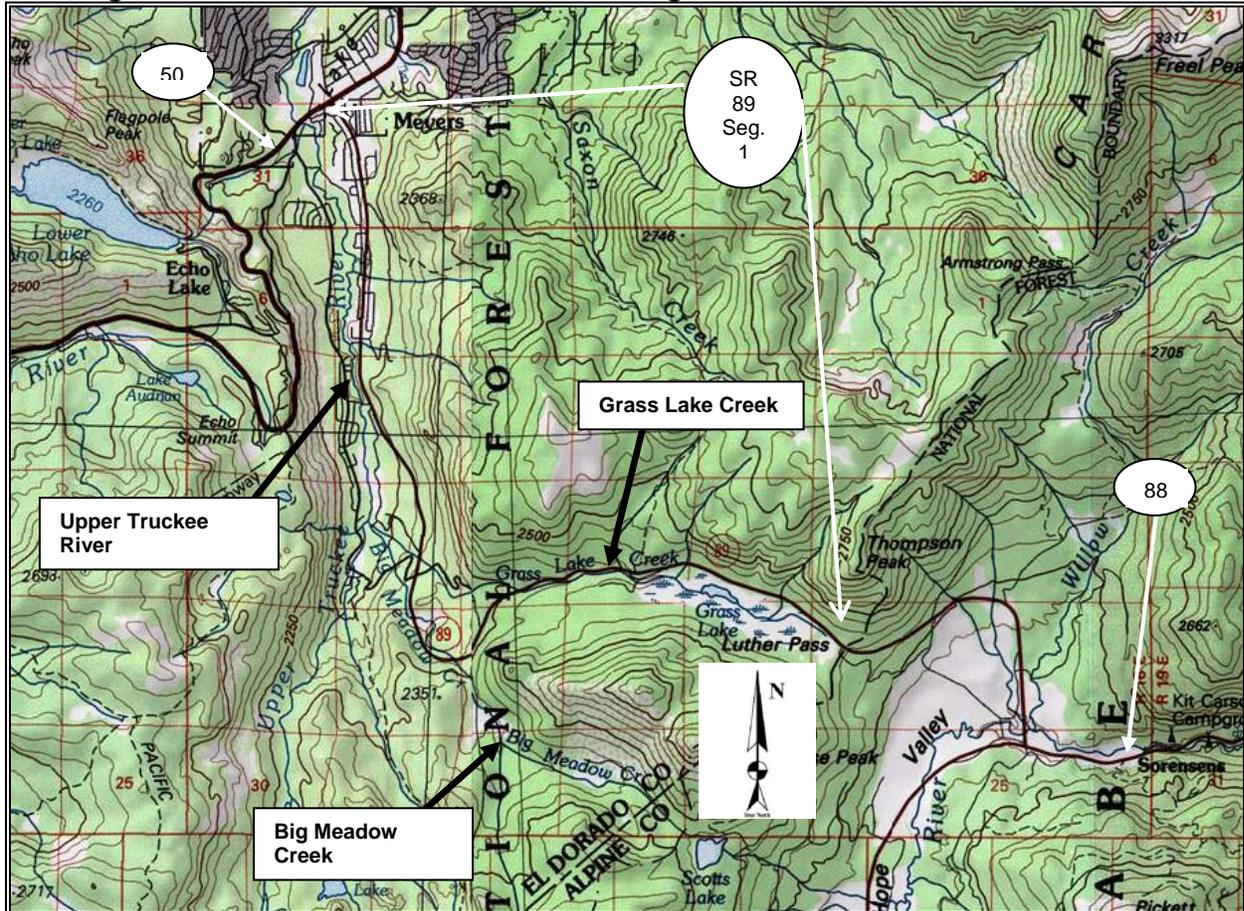
2.8.2. Affected Environment

2.8.2.1. Surface and Groundwater Resources

Surface water body resources along this segment include stream channels and sensitive marsh/wetland areas. The drainages that intersect this highway segment are Grass Lake Creek, the stream segment of the Upper Truckee River going north, and Big Meadows Creek, and smaller unnamed channels. Figure 2.8-1 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 LRWQCB'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 2.8-1 Water Bodies on SR 89 Segment 1



Groundwater levels range from 1.3 to 69.8 feet below ground surface in the Upper Truckee and Trout Creek watersheds (USGS 1996). Groundwater varies depending on 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 provides drinking water to the project area.

2.8.2.2. 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” (California 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 certain quality and quantity objectives to be met for surface water and groundwater.
- Fish, plants, and other wildlife, as well as humans, use water beneficially.

Section 305(b) of the CWA mandates biennial assessment of the nation’s water resources. These water quality assessments are used to identify and list waters that do not meet water quality standards. The resulting list is referred to as the 303(d) list. The CWA also requires states to establish a priority ranking for these impaired waters, and to develop and implement total maximum daily loads (TMDLs). A TMDL specifies the maximum amount of a pollutant that a water body can receive and still meet water quality standards. Section 303(d)-listed water bodies within the project area include the Upper Truckee River and its tributary, Big Meadow Creek.

Upper Truckee River

The Truckee River was first included on the 1992 Section 303(d) list for impairment due to excessive sedimentation. The Truckee River and its tributaries are highly valued by the local and visiting communities. Much of the region’s economic productivity depends upon the river’s high quality, naturally functioning, and aesthetic water resources.

According to the Basin Plan, the Truckee River supports the following beneficial uses:

- Municipal and domestic supply
- Agricultural supply
- Groundwater recharge
- Water contact recreation
- Non-contact water recreation
- Commercial and sport fishing
- Freshwater replenishment
- Hydropower generation
- Cold freshwater habitat
- Wildlife habitat
- Rare, threatened or endangered species
- Migration of aquatic organisms
- Spawning, reproduction, and development
- Water quality enhancement
- Flood peak attenuation/flood water storage.

Increased sedimentation has been linked to the impairment of these beneficial uses (CCPDR, LRWQCB, and TRWC 2002).

Big Meadow Creek

The Big Meadow Creek tributary watershed of the Upper Truckee River consists of a triangular-shaped 5-square-mile area. It has a long history of land use and human effects. The Forest Service believes that the cumulative effects of land use are having a negative impact on ecosystem processes in this watershed. In addition, Big Meadow Creek has the potential for sedimentation. The beneficial uses for Big Meadow Creek include watering livestock, propagating wildlife, and aquatic life.

2.8.3. 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 2.8.4. Nearly all work in streams during construction would occur at locations where culverts cross under the roadway and are planned for replacement or upgrading.

The goal of the proposed project is to improve the quality of the storm water runoff from the highway before it reaches the waterways within the vicinity of SR 89, with

the overall goal to improve the water quality of Lake Tahoe. The lake is the receiving water body of the majority of the existing waterways within the project limits. The proposed project also has the potential for adverse effects from the installation of the proposed facilities and roadway improvements. The following sections summarize the potential for adverse effects.

Construction Impacts

The project will involve construction of infiltration basins, paving of pullout and maintenance areas, and installation of sand traps and other drainage facilities. As a result of these proposed project activities, vegetation clearing and excavation would take place directly alongside the existing roadway and extending outward where infiltration basins are installed. There would be an increased potential for soils exposed during construction activity to be transported 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. Eroded soils that leave the construction sites would have an adverse effect 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 and Culverts

Annual and seasonal drainages within the project area intersect or run along 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. The major drainage channels within the project limits of SR 89 are Grass Lake Creek, Big Meadow Creek, and Upper Truckee River. Existing culverts along this roadway segment are planned for replacement as needed. This would require excavation of an 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.

Creation of Additional Sources of Polluted Runoff

The water released or coming out of the proposed basins and storm water collection facilities would have reduced concentrations of sediments and pollutants. However, where storm water 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 project design, and are discussed in Section 2.8.4.

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

Section 303(d) Water Body Impacts/Avoidance

SR 89 already crosses the two 303(d)-listed water bodies in the project area, Big Meadow Creek and Upper Truckee River. The project will improve the quality of storm water runoff from the highway into these creeks, and only a potential exists for indirect effects related to construction activity. The project SWPPP will contain BMPs for erosion and sediment control as necessary to avoid or minimize any increased erosion potential during construction.

Potential Impacts to Groundwater

The project 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.

Overall, the proposed project would not adversely affect pollutant loads in groundwater. The proposed improvements will divert, collect, and treat storm water runoff from road surfaces that would otherwise directly infiltrate or percolate into

Tahoe area aquifers. Implementing the proposed project would increase the amount of sediment-entrained pollutants that would be filtered out of surface water in sand traps and infiltration basins or biofiltration swales; this would help reduce or remove these pollutants from entering groundwater. Pollutants added to groundwater from percolation from new infiltration basins would be a minor source because the streams that recharge groundwater aquifers in the Tahoe area receive substantial water from sources outside of the project limits (i.e., the general watershed, outside of the right-of-way and roadway surfaces of SR 89) in comparison to the area actually affected within the proposed right-of-way. Therefore, the project would not affect pollutant loads in groundwater.

TRPA Considerations

The project will provide storm water treatment along SR 89. Newly installed drainage facilities will capture many pollutants before they enter area waterways. No adverse effects are anticipated.

2.8.4. Avoidance, Minimization and/or Mitigation Measures

The project would have a beneficial effect on the quality of storm water runoff; however, as for any major construction project, there is the potential for some adverse effects. Avoidance and minimization of water quality impacts are conditions of the NPDES permit, TRPA permit, and LRWQCB and Caltrans requirements. Implementation details for these measures will be developed and incorporated into project design and operations prior to project startup, and into the project SWPPP. With proper implementation of these measures, temporary and permanent construction-related water quality impacts will be avoided or minimized.

WS-1 Construction Measures

Protections for stream banks in creeks are recommended where creeks intersect SR 89 and at sites with cross-culverts that are proposed for replacement or widening. 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.

In addition, the following measures would be applied:

- TRPA and LRWQCB regulations limit grading to 3 cubic yards from October 15 to May 1 of each year. Unless a variance is obtained, construction activities will conform to this requirement.
- Pollution prevention measures will be implemented to protect surface water quality degradation to the existing surface water resources within the SR 89 project limits, and to prevent erosion of bare soils and potential non-point source pollutant contribution.

WS-2 Groundwater Measures

The project is not anticipated to encounter groundwater, as excavation work should be minimal. However, if construction encounters groundwater or may involve non-storm water discharges, consultation with the Lahontan RWQCB or California Department of Toxic Substances Control may be appropriate. A project-specific Waste Discharge Permit may be required if substantial dewatering will take place.

2.9. Soils, Soil Conservation, and Geology

2.9.1. Regulatory Setting

The CEQA Checklist (Appendix B) identifies potential issues that could lead to a significant impact pursuant to CEQA, including soil erosion and location on unstable or expansive soils. Topographic and geologic features are also protected under CEQA.

The following TRPA Thresholds apply to soil conservation:

- SC1: The TRPA threshold for soil conservation requires that impervious coverage comply with the coverage coefficients defined in the *Land-Capability Classification of the Lake Tahoe Basin, California-Nevada: A Guide to Planning* (Bailey 1974). Additional land coverage is monitored on a project basis and recorded in square feet. Coverage may be utilized directly or by coverage transfers within a related project area. 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 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.

2.9.2. Affected Environment

2.9.2.1. Soils and Soil Conservation

SR 89 traverses many soil associations within the project study limits. Several of the soil series available within the project's study area are listed as hydric soils (soils that are formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part) in the National Resources Conservation Service (NRCS) *List of Hydric Soils* (NRCS 1995). The soils with hydric inclusions within the study area include Loamy alluvial land (Lo); Meeks very stony loamy coarse sand, 30 to 60 percent slopes (MsG); and Meeks extremely stony loamy coarse sand, 30 to 60 percent slopes (MtG).

Land capability districts (LCDs) have been determined for all areas within the Tahoe Basin. Land capability is "the level of use an area can tolerate without sustaining permanent (environmental) damage through erosion or other causes" (Bailey 1974).

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

2.9.2.2. Geology

Human-Made and Natural Features

SR 89 was constructed with cuts and fills, through some areas of steep terrain. Existing cuts are in hard rock (granite), glacial till, or mixed hard rock and glacial till. The existing highway crosses numerous drainages of varying size with associated culverts and bridges. Cut-and-fill slopes exhibit areas of erosion.

Site Geology

The project area is 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).

2.9.3. Impacts

New drainage features will create additional hard coverage and changes to the existing landscape. However, these changes are not expected to result in substantial impacts pursuant to CEQA or TRPA. The existing geology has been considered during the project design process. Areas that are not suitable for water quality treatment features, either due to incompatible terrain or existence of wetlands, marshes, and/or SEZs, were eliminated from consideration.

TRPA Considerations

TRPA's primary concern regarding soils is potential creation of additional coverage.

In accordance with Chapter 20.3.B(8) of the TRPA Code of Ordinances, the proposed infiltration basins will create impervious coverage that is exempt from the Bailey land coverage limits. Coordination with TRPA on similar storm water quality projects determined that maintenance access areas adjacent to these structures are not exempt.

The addition of asphalt-concrete and the placement of structures during the installation of drainage improvements, construction of maintenance pullouts, and widening of shoulders are expected to increase impervious land coverage within the project area. Revegetation of these areas may be infeasible because these areas will be converted to "hard" impervious surfaces. In addition, areas of SEZ land, LCD 1b, will be disturbed by additional coverage (fills and structures).

Construction of infiltration basins, basin access routes, culvert outfall areas, and some areas of shoulder widening will require vegetation removal but will be revegetated with native plants and grasses upon completion. Vegetation removal and subsequent revegetation by applying appropriate (non-impervious) erosion control materials will be determined by the Caltrans Landscape Architecture branch in conjunction with TRPA.

Additionally, existing soft coverage areas (typically compact unvegetated soils) within the project area are proposed to be restored by applying appropriate (non-impervious) erosion control materials, as determined by the Caltrans Landscape Architecture branch in conjunction with TRPA.

TRPA is concerned about how to prevent new coverage from being created as a result of the project, because there is a potential for soft coverage to increase after the shoulder widening. In areas where shoulder widening is planned, automobiles may continue to park off pavement and create new areas of compacted dirt and disturbance

to adjacent lands. To help prevent autos from creating new areas of coverage, rock-embedded berms may be incorporated, to the extent feasible, just outside of the clear recovery zone. Other methods that will be installed closer to the edge of pavement to prevent parking will include bollards and landscaping.

The TRPA Parcel Evaluation System does not apply to this water quality improvement project. The project will require minor grading to develop drainage basins, install sand traps, and construct retaining walls to stabilize slopes.

The excavation of slopes will be necessary at some locations. Retaining walls and other slope stability measures are part of the project. In addition, soil conservation measures will be employed as necessary. The project will not result in the modification of a channel of a river or stream, sandy beach, or lake bed, nor will it increase exposure of people or structures to geologic hazards.

2.9.4. Avoidance, Minimization and/or Mitigation Measures ***SC-1 Purchase of Land Coverage Credits***

Due to the amount of shoulder widening proposed for this project, the purchase of land coverage credits is anticipated. If needed, Caltrans will transfer land coverage credits at a 1:1 ratio for high-capability lands (LCDs 4-7) and 1.5:1 ratio for low-capability lands (LCDs 1-3) pursuant to Chapter 20 of the TRPA Code of Ordinances. In addition, according to TRPA Code Section 20.3C(3), land transfers to provide coverage for low-capability lands, LCDs 1-3, must be permanently retired as set forth in TRPA Code Section 20.3C(7). Caltrans is not on the TRPA individual parcel system and is creating coverage within state right-of-way or within land on which highway agreements exist. Any land transfer would be performed under the guidance of the California Tahoe Conservancy, a State of California land bank administration agency. Caltrans has existing coverage credits at the Conservancy's land bank via a Memorandum of Understanding dated October 18, 2000.

SC-2 Geotechnical Investigations

Proposed retaining walls or other structures 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 the design of individual project elements to ensure that there would be no adverse effects.

2.10. Hazardous Waste / Materials

2.10.1. Regulatory Setting

Hazardous materials and hazardous wastes are regulated by many state and federal laws. These laws include not only specific statutes governing hazardous waste but also a variety of laws regulating air and water quality, human health, and land use.

The primary federal laws regulating hazardous wastes/materials are the Resource Conservation and Recovery Act of 1976 and the Comprehensive Environmental Response, Compensation and Liability Act of 1980. The purpose of the latter act, often referred to as Superfund, is to clean up contaminated sites so that public health and welfare are not compromised. The Resource Conservation and Recovery Act provides for “cradle to grave” regulation of hazardous wastes. Other federal laws include:

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

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

Hazardous waste in California is regulated primarily under the authority of the Federal Resource Conservation and Recovery Act of 1976 and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

TRPA does not maintain any thresholds for hazardous waste. The TRPA Initial Environmental Checklist questions whether the project will result in the risk of hazardous material spills or exposure to health hazards.

2.10.2. Affected Environment

A hazardous waste evaluation was conducted and involved the following:

- A review of the project plans and aerial mapping
- Discussions with the Project Engineer on project work scope
- A site field review
- An Environmental Data Resources (EDR), Inc. environmental information database search
- Discussions with regulatory agencies.

2.10.3. Impacts

The hazardous waste evaluation identified the potential for contamination along SR 89 within the project limits. Soils contaminated with aerially deposited lead (ADL) may exist within and near the state right-of-way due to the past use of leaded fuels. The areas of primary concern in relation to highway facilities are soils along routes with historically high vehicle emissions due to large traffic volumes, congestion, or stop-and-go conditions. ADL from vehicle emissions would have been deposited prior to 1986 when nearly all lead was removed from gasoline in California. The current alignment was constructed in the 1960s; therefore, some level of ADL may be present in soils along the highway. As this segment of SR 89 is relatively rural and uncongested, ADL concentrations may be relatively low but would have to be determined through soil testing.

Treated wood posts that contain hazardous chemicals may have been used to support guardrails along the SR 89. The Project Study Report (Caltrans 2003b) also identified the removal and disposal of yellow thermoplastic lane striping, which may contain heavy metals, as a potential hazard.

The project contractor will likely use an asphalt-concrete batch plant and temporary work or staging areas for equipment and materials, which can pose a threat to soil or water contamination if not contained. The presence of these materials along a state highway or used during construction are not unusual, but must be handled appropriately prior to or during construction.

TRPA Considerations

Changes in the potential for risks of spills would only be associated with project construction, and the construction contractors will be required to comply with all regulatory and Caltrans safety requirements. The project would not create any potential new health hazards.

2.10.4. Avoidance, Minimization and/or Mitigation Measures

HZ-1 Lead-Contaminated Soils

Because the route has relatively low traffic volumes, a modified version of Caltrans Non Standard Special Provisions (N-SSP # 07-330) will be included for this project in lieu of a Preliminary Site Investigation. The N-SSP addresses the need for a lead compliance plan and other factors. This process would be performed during the PS&E stage.

HZ-2 Disposal of Removed Materials

Wood posts used in the guardrailings should not be burned as part of the disposal process and should be disposed of in an appropriate landfill. Caltrans will stipulate this requirement of the contractor.

Any removal of yellow thermoplastic lane striping must be performed in accordance with a Lead Compliance Plan and disposed of at a Class I disposal facility.

2.11. Air Quality

2.11.1. Regulatory Setting

CEQA requires consideration of whether a project could conflict with or obstruct implementation of an air quality plan, cause or substantially contribute to an exceedance of any air quality standard, result in a cumulative net increase in any criteria air quality pollutant, or expose people to substantial pollutant concentrations or odors.

Air quality regulations applicable to this project are established through both the Federal Clean Air Act of 1990 and the California Clean Air Act of 1988, as amended. The USEPA regulates compliance with federal standards. The California Air Resources Board (CARB) promulgates the state air quality standards and oversees the activities of the local Air Quality Management and Air Pollution Control Districts. 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.

The following TRPA thresholds would apply to the current project:

- AQ1: Carbon monoxide levels shall not exceed the TRPA 8-hour 6.0 parts per million (ppm) standard.
- AQ2: Ozone levels shall not exceed the TRPA 1-hour standard of 0.08 ppm.
- AQ3: Particulate matter concentrations shall not exceed the California and federal standards for 24-hour concentrations and the annual average.
- AQ4: TRPA's regional and sub-regional visibility standards shall not be violated. In addition, for regional and sub-regional visibility, wood smoke concentrations shall be reduced 15 percent below the 1981 levels and for sub-regional visibility suspended soil particles shall be reduced 30 percent below the 1981 levels.
- AQ7: Vehicle Miles Traveled (VMT) shall be reduced 10 percent below the 1981 levels.
- AQ8: Dissolved inorganic nitrogen load on Lake Tahoe from atmospheric sources shall be reduced by approximately 20 percent of the 1973–1981 annual average.

2.11.2. Affected Environment

Air Quality Standards

Applicable federal and state air quality standards have been established for six criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter, lead, and sulfur dioxide (SO₂). These standards are summarized in Table 2.11-1.

Table 2.11-1 Federal and California Ambient Air Quality Standards

Pollutant	Averaging Time	Federal ^a	State
Ozone (O ₃)	1 Hour	None ^d	0.09 ppm
	8 Hour	0.08 ppm	0.07 ppm ^c
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 ^b	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 2005

Notes:

- a. Primary NAAQS unless otherwise noted
 - b. Secondary NAAQS
 - c. Approved by CARB on April 2005
 - d. 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/m³ = microgram(s) per cubic meter
 ppm = parts per million

Current Air Quality Regulatory Status in the Project Area

The USEPA classifies air basins (or portions thereof) as “attainment,” “nonattainment,” or “unclassified” for each criteria air pollutant, based on whether or not the National Ambient Air Quality Standard (NAAQS) has been consistently achieved. The USEPA has classified the Lake Tahoe Air Basin as being in attainment of the federal standards for all of the criteria pollutants.

California has established its own ambient air quality standards for criteria air pollutants that are, in general, more stringent than the federal standards. 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

standard for particulate matter less than 10 microns in diameter (PM₁₀). The Lake Tahoe Air Basin has not been classified for visibility-reducing particles and hydrogen sulfide because insufficient data are available to determine whether or not 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.

The TRPA, along with the Nevada Division of Environmental Protection 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.

- The TRPA has adopted a regional transportation plan–air quality plan (TRPA 1992) that focuses on attaining the federal and state air quality standard. Within the plan, 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.

No TRPA standards have been set for NO₂ and SO₂. However, the concentrations of these criteria pollutants must still comply with federal and state ambient air quality standards.

Existing Air Quality

The two air quality monitoring stations nearest the project limits are at Echo Summit and at the South Lake Tahoe Airport. Monitoring data from 2003 through 2005 show that ambient O₃ levels had recorded exceedances of the state and TRPA O₃ standards, but the violations of the standards were not large or frequent enough for the USEPA or CARB to classify the Lake Tahoe Air Basin as nonattainment of these standards. The 24-hour state PM₁₀ standard was exceeded in 2003 in the South Lake Tahoe area for about 6 days, resulting in a classification of nonattainment. There were no exceedances of this standard in 2004 or 2005, and there have been no violations of the federal or state standards for PM_{2.5} for the last 5 years.

2.11.3. Impacts

Potential Project Impacts to Air Quality

Potential air quality impacts from the project would be limited to construction activities. Dust emissions from construction would result from earthmoving and

heavy equipment use, including land clearing, ground excavation, cut and fill, and general roadbed construction activities. Excavation and earthwork would be necessary for installation of pavement, retaining walls or soil-nail walls, runoff basins, water collection and control devices, and similar facilities. The contractors may use controlled blasting where existing rock prevents or substantially impairs excavation. In addition to particulate emissions, combustion emissions from construction equipment would occur. All of these activities and effects would be temporary. Thus, the impacts would be temporary both in time and location.

This project 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. Consequently, the project would not introduce any additional permanent vehicular emission sources, and there will be no post-construction effects to air quality.

The project would not affect highway truck or diesel emissions or mobile source air toxics. Although particulate matter may be generated during construction, the project would not affect vehicular PM_{2.5} or PM₁₀ emissions and would not require a particulate matter hot-spot evaluation.

TRPA Considerations

Potential air quality effects are only associated with construction, primarily dust and construction equipment emissions. The project would not affect any TRPA thresholds or air quality standards.

2.11.4. Avoidance, Minimization and/or Mitigation Measures

The proposed project 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 construction contractor would be required to apply for and to obtain the necessary TRPA permit(s). The following measures will be implemented to avoid or minimize construction-related air quality effects.

AQ-1 Control Dust from Construction Activities

Typical dust control practices that may be required to reduce the amount of dust from construction emissions may include, but are not limited to, the following measures:

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

The dust control activities will comply with Section 10 of the Caltrans Standard Construction Specifications (Caltrans 2006a) and will be reviewed and approved of by TRPA.

AQ-2 Reduce Emissions from Construction Equipment

The following measures can reduce pollutant emissions in construction equipment exhaust:

- Keeping engines properly tuned
- Limiting engine idling
- Avoiding unnecessary concurrent usage of equipment.

2.12. Climate Change

2.12.1. Regulatory Setting

While 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), the efforts devoted to greenhouse gas² (GHG) emissions reduction and climate change research and policy has increased dramatically in recent years. In 2002, with the passage of Assembly Bill (AB) 1493, California launched an innovative and proactive approach to dealing with

² Greenhouse gases related to human activity include carbon dioxide, methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, trifluoromethane (HFC-23), 1,1,1,2-tetrafluoroethane (HFC-134a), and 1,1-difluoroethane (HFC-152a).

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 reinforced with the passage of AB 32, the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals and mandates that CARB create a plan that includes market mechanisms and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

Climate change and GHG emissions reduction are also a concern at the federal level; however, at this time, no legislation or regulations have been enacted that specifically address these issues.

2.12.2. Affected Environment

According to a recent white paper by the Association of Environmental Professionals (Hendrix and Cori 2007), "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, Caltrans has created and is implementing the *Climate Action Program at Caltrans* (Caltrans 2006c).

One of the main strategies 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) and speeds over 55 miles per hour. Relieving congestion by enhancing operations and improving travel times in high-congestion travel corridors will lead to an overall reduction in GHG emissions.

2.12.3. Conclusion

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 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), Caltrans is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high-density housing along transit corridors. Caltrans 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 USEPA 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.

2.13. Noise

2.13.1. Regulatory Setting

Federal, state, and local laws, regulations, and ordinances provide the basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment, as summarized in the following subsections.

California Environmental Quality Act

CEQA requires a strictly no-build versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible.

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 over-snow vehicles. 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 between the hours of 8:00 a.m. and 6:30 p.m.

In addition, TRPA has established noise thresholds in three categories. Only one applies to this project: Threshold N-3, Community Noise Equivalent Levels (CNELs). TRPA applies different maximum CNELs, measured in dBA over a 24-hour period, to different land uses. The maximum CNEL is generally 50 dBA for conservation areas, 55 dBA for high-density residential and highway areas, and 60 dBA for commercial areas. CNELs may vary slightly depending on location.

TRPA has also determined maximum CNELs for its Plan Area Statements developed for specific areas. The four PASs that apply to the regional area crossed by this segment on SR 89 and the corresponding maximum CNELs are:

- PAS #121 – Freel Peak: 25 dBA
- PAS #125 – Meyers Community – Commercial: 65 dBA
- PAS #137 – Christmas Valley: 50 dBA; along the SR 89 corridor, 55 dBA
- PAS #141 – Luther Pass: 25 dBA

CNEL represents an average noise level over a 24-hour period with the addition of 5 A-weighted decibels (dBA) to noise generated in the evening and 10 dBA for noise generated during the nighttime period. These noise level additions, or “penalties,” account for higher sensitivity to noise generated during normally very quiet periods.

El Dorado County General Plan

Maximum allowable noise levels resulting from construction are outlined in the County’s General Plan (El Dorado County 2004) and depicted in Figure 2.13-1. In addition, the following El Dorado County policy would apply.

Policy 6.5.1.11. The standards outlined in Tables 6-3, 6-4, and 6-5 (Figure 2.13-1) 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.

2.13.2. Affected Environment

The existing noise along the project corridor comes primarily from vehicular traffic on SR 89 and the portion of US 50 within 500 feet of its intersection with SR 89. No potential sensitive receptors other than private residences exist in the project area, and the only residences located within this project segment are between US 50 and SR 89 in the Christmas Valley area. The closest residence to SR 89 is located along Grass Lake Road about 575 feet from the highway centerline. From Grass Lake Road to near Christmas Valley Road, the right-of-way is adjoined by parcels with residences located 300 to 500 feet from the roadway. From Christmas Valley Road south, residences are located on both sides of the roadway about 100 feet from the centerline. These homes are along Blitzen Road (west of SR 89), St. Nick Way, and Kaska Street (east of SR 89) within the Christmas Valley area. Table 2.13-1 shows typical daytime noise levels along segments of the highway calculated using the Caltrans LeqV2 traffic noise model with traffic inputs adapted from the Annual Average Daily Truck Traffic listed for SR 89 and US 50 in or near the project limits (Caltrans 2005).

Common Noise Levels

Table 2.13-2 lists noise levels of common activities in dBA to enable readers to compare the actual and predicted highway noise levels discussed in this section with common activities.

Figure 2.13-1 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 Designation¹	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

Table 2.13-1 Typical Daytime Noise Levels Estimated from Average Daily Traffic

Segment	Segment Description	Typical Daytime Noise Levels at 100 Feet from Roadway Center
SR 89 Segment 1	Alpine County Line to the SR 89/US 50 Intersection at Meyers	61 to 62 dBA
US 50 Segment 1	Meyers Rd. to 330 feet east of Incline Rd.	66 dBA L_{eq}

Source: 2005 Annual Average Daily Truck Traffic on the California State Highway System, Department of Transportation, November 2006.

L_{eq} = Noise expressed as the energy average of the A-weighted decibel occurring during a one-hour period.

Table 2.13-2 Typical Noise Levels in the Environment

Common Outdoor Noise Source	Noise Level (dBA)	Common Indoor Noise Source
	120 dBA	
Jet fly-over 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
	70 dBA	Garbage disposal at 1 meter
Gas lawn mower at 30 meters		Vacuum cleaner at 3 meters
Commercial/Urban area daytime	60 dBA	Normal speech at 1 meter
Suburban expressway at 90 meters		Active office environment
Suburban daytime	50 dBA	
Urban area nighttime	40 dBA	Quiet office environment
	30 dBA	
Suburban nighttime		Library
Quiet rural areas	20 dBA	Quiet bedroom at night
	10 dBA	
Wilderness area		Quiet recording studio
Most quiet remote areas	0 dBA	Threshold of human hearing
Threshold of human hearing		

2.13.3. Impacts

Construction Activity and Noise Levels

Construction would generate noise and temporarily increase noise levels at adjacent land uses. These 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.

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 50 feet from the center of the site during busy construction periods. Variations in construction noise levels would occur on a day-to-day basis depending on the activities occurring at the work site. Table 2.13-3 summarizes the typical range of average noise levels that could be expected during project construction phases.

Table 2.13-3 Typical Ranges of Energy Equivalent Noise Levels at 50 Feet, in dBA L_{eq} , at Construction Sites

Phase	Public Works Roads and Highways, Sewers, and Trenches	
	I	II
Ground Clearing	84	84
Excavation	88	78
Foundations	88	88
Erection	79	78
Finishing	84	84

I - All pertinent equipment present at site.

II - Minimum required equipment present at site.

Source: USEPA 1973

Maximum noise levels resulting from individual pieces of equipment range from about 74 dBA to 89 dBA measured at a distance of 50 feet from the construction equipment. Table 2.13-4 summarizes the typical range of maximum noise levels that could be expected with project construction equipment.

Table 2.13-4 Maximum Noise Levels from Construction Equipment at 50 Feet

Equipment	Maximum Noise Levels at 50 Feet (dBA)
Dozer	88
Excavator	85
Elevating Scraper	89
Backhoe	84
Front End Loader	87
Water Truck	87
Tractor Trailer-20 CY	80
Crane	86
Compactor	82
Paver	85
Welding Machine	74
Generator	84
Drill Rig	88

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

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

Maximum and average noise levels generated by construction activities could exceed El Dorado County noise standards depending on the construction activity and its proximity to noise-sensitive land uses. El Dorado County's maximum allowable noise exposure levels for construction noise during the daytime are somewhat restrictive. The hourly average limit of 55 dBA L_{eq} would generally be 6 to 13 decibels below ambient hourly average traffic noise levels at the closest receivers to the highway alignment (approximately 100 feet from the road 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 do not account for the duration of project construction.

Construction equipment would likely include air compressors, paving machines, forklift trucks, loaders, pavement grinders, dump trucks, trenching machines, compactors, and backhoes. Typical hourly average noise levels resulting from the construction of roadways, and trenches are about 73 dBA to 82 dBA measured at a distance of 100 feet. Maximum noise levels resulting from individual pieces of equipment range from about 68 dBA to 83 dBA measured at a distance of 100 feet. Hourly average noise levels could exceed 55 dBA L_{eq} within about 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 250 feet of the loudest pieces of construction equipment.

Construction noise impacts primarily result when construction activities occur during noise-sensitive times of the day (early morning, evening, or nighttime hours); when the construction occurs in areas immediately adjoining noise-sensitive land uses; or when construction durations last over extended periods of time. Project construction activities are anticipated to affect a particular receiver or group of receivers for a period of time less than one construction season as work progresses along the highway. The impact would be avoided with required standard construction noise control measures at construction sites.

Post-Construction Noise

Noise levels along the project limits would be the same after construction is completed as before. The project will not change highway capacity or traffic flow to any measurable extent that would have any effect on permanent noise levels. There would be no effects or change to the existing noise environment.

TRPA Considerations

As the project would not contribute any new traffic, it will not change traffic-related noise levels with respect to the TRPA CNEL noise thresholds. The noise thresholds could be exceeded at times of heavy or sustained construction activities. TRPA-approved construction projects are exempt from the TRPA Noise Ordinance if the construction activities occur between the daytime hours of 8:00 a.m. to 6:30 p.m. The contractor will be restricted to these time periods unless a variance to this ordinance is obtained.

2.13.4. Avoidance, Minimization and/ or Mitigation Measures

NO-1 Standard Noise Control Measures

The following standard construction noise control measures would be implemented to control construction noise.

- Noise-generating activities will be restricted at the construction site or in areas adjacent to the construction site associated with the project to the hours of 8:00 a.m. to 6:30 p.m.
- Contractors will equip internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.
- Contractors will limit or prohibit idling of internal combustion engines on equipment or vehicles that are not actively involved in construction activities.
- Staging of construction equipment will be avoided within 200 feet of residences and stationary noise-generating construction equipment, such as air compressors and portable power generators, will be located as far as practical from existing noise sensitive receptors.
- If necessary to avoid severe temporary noise impacts, temporary barriers may be used to screen stationary noise generating equipment when located immediately adjacent to noise sensitive land uses. The need for this measure would be determined by the resident engineer.

- A noise disturbance coordinator will be designated who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and would require that reasonable measures warranted to correct the problem be implemented. A telephone number for the disturbance coordinator will be posted at a conspicuous location at the construction site and included in the notice sent to neighbors regarding the construction schedule.

Biological Environment

2.14. Natural Communities

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

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act (FESA) are discussed in Section 2.18. Wetlands and other waters of the U.S. and SEZs are discussed in Section 2.15. TRPA has designated specific habitat types and species of concern, which are addressed throughout the following biological environment discussions.

The study area for biological resources consists of an Environmental Study Limit that represents the estimated area within which the project would be constructed. The ESL limits are shown on the maps in Appendix A.

2.14.1. Regulatory Setting

According to CEQA, significant impacts could result if a project results in long-term degradation of a sensitive plant community or substantial loss of a plant community.

The following TRPA threshold applies to the proposed project:

- 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 1) deep-water plants of Lake Tahoe; 2) Grass Lake (sphagnum bog); 3) Osgood swamp; and 4) the Freel Peak Cushion Plant community.

2.14.2. Affected Environment

This project segment crosses 11 habitat and land use types, categorized as aspen, Jeffrey pine, lodgepole pine, montane chaparral, montane riparian, perennial grass, red fir, sagebrush, Sierran mixed conifer, subalpine mixed conifer, and wet meadow. The project segment also crosses developed areas categorized as urban habitat. These habitats fall within the Upper Truckee River Watershed, which ultimately drains into Lake Tahoe.

The following describes TRPA uncommon plant communities and CDFG natural communities of special concern that were recorded or identified in the study area.

2.14.2.1. TRPA Uncommon Plant Communities (Grass Lake)

The wet meadows at Grass Lake are unique, supporting flora that includes three species of carnivorous plants and four species of orchids (Forest Service 2005). In addition, the wet meadows of Grass Lake comprise the largest and best example of a sphagnum bog in the Sierra Nevada. The CDFG classifies the wet meadow habitat at Grass Lake as fen habitat, a CDFG community of special concern. Grass Lake is designated as a Forest Service Research Natural Area, permanently protected to conserve biodiversity and to provide areas for scientific research.

2.14.2.2. CDFG Natural Communities of Special Concern

Aspen

Aspen habitats are dominated by aspen trees but also co-occur with conifers and riparian trees including white fir (*Abies concolor*), mountain alder (*Alnus incana* ssp. *tremuloides*), Lemmon's willow (*Salix lemmonii*), and Jepson willow (*Salix jepsonii*), and a diverse understory of herbaceous and woody plants. This habitat type occurs infrequently within the ESL, and stands near the highway primarily occur at Grass Lake near Luther Pass and where Grass Lake Creek crosses SR 89 (approximately PM 2.7–2.8).

Wet Meadow

The wet meadow habitat type is characterized by predominantly moist soils and a dense cover of sedges, rushes, wetland grasses, and perennial herb species. Wet

meadow habitats occur at Grass Lake, where they intergrade with perennial grass habitats. The wet meadows at Grass Lake support a unique flora that includes three species of carnivorous plants and four species of orchids (Forest Service 2005).

Montane Riparian

The vegetation of montane riparian habitats is composed of relatively small-stature broad-leaved deciduous trees with a sparse understory. Dominant canopy trees include mountain alder, Jepson willow, Lemmon's willow, Eastwood willow (*Salix eastwoodiae*), and mountain maple (*Acer glabrum*). Montane riparian habitats are associated with montane lakes, bogs, meadows, rivers, streams, and springs. This habitat type occurs in patches within or near the ESL in the higher elevations, from the Luther Pass area to the approximate midpoint of the project limits.

2.14.3. Impacts

Areas of sensitive TRPA and CDFG wet meadow habitat at Grass Lake, as well as aspen, wet meadow, and montane riparian habitats, occur near or adjacent to some preliminary locations for permanent cut and fill, infiltration basin construction, and pullout paving. These habitat areas have largely been avoided in the preliminary plans for the project. The locations of these habitats are based on Forest Service and TRPA mapping data, which provide generalized vegetation boundaries. Where these habitat areas are adjacent to the proposed project features, there remains a potential for direct or indirect effects from construction activities.

The proposed project features will not restrict wildlife movement. Work areas will be restored following project completion.

TRPA Considerations

With implementation of the avoidance and minimization measures listed in Section 2.14.4, the proposed project is consistent with TRPA Threshold V2.

2.14.4. Avoidance, Minimization and/or Mitigation Measures

The project design avoids mapped TRPA and CDFG sensitive habitat areas, as defined by the Forest Service and TRPA. To ensure that construction work and potential indirect impacts do not adversely affect these areas, the following measures will be applied.

NC-1 Measures for Grass Lake

The following specific avoidance and minimization efforts will be applied during the construction season within the vicinity of Grass Lake:

- Construction activities will not be allowed within the wet meadows of Grass Lake.
- The interface between Grass Lake and the adjacent vegetation community will be fenced off as an ESA when it falls within the ESL. High-visibility fencing will be installed along the margins of construction work areas where those areas are adjacent to sensitive biological resources.

NC-2 General Avoidance/Minimization Measures and BMPs for Natural Communities

In addition, the following general avoidance and minimization efforts (described in detail in Section 2.20) will be implemented:

- GE-01: Establishment of Environmentally Sensitive Areas (ESAs)
- GE-02: Construction Clean-up
- GE-03: Construction Scheduling (Project activities in the vicinity of Grass Lake will occur in the dry season, which is typically between July 15 and October 15 but depends on seasonal conditions. Project activities in the vicinity of aspen, wet meadow, and montane riparian communities will occur between September 1 and October 15.)
- WQ-03: Minimizing Disturbance of Aquatic Resources
- WQ-04: Erosion Control
- WQ-05: Prohibition of Construction Materials Entering Aquatic Resources
- WQ-06: On-Site Restoration
- HA-01: Avoidance of Habitat Disturbance
- HA-02: Revegetation of Disturbed Areas
- HA-03: Construction Equipment Weed Control
- HA-04: Equipment staging
- HA-05: Weed-Free Erosion Control Seed Mix/Stock
- HA-06: Preservation of Existing Top Soil Layer
- WL-02: Limit Vegetation Removal

2.15. Wetlands and Other Waters of the U.S., and Stream Environment Zones

2.15.1. Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the CWA (33 USC 1344) is the primary law regulating wetlands and waters. The CWA regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Other waters of the United States include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Section 404 of the CWA establishes a regulatory program that provides that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the USACE with oversight by the USEPA.

Executive Order 11990 also regulates the activities of federal agencies with regard to wetlands. Essentially, this executive order states that a federal agency such as FHWA cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: (1) that there is no practicable alternative to the construction and (2) the proposed project includes all practicable measures to minimize harm.

At the state level, wetlands and waters are regulated primarily by the CDFG and the RWQCBs. Sections 1600–1607 of the California Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify the CDFG before beginning construction. If the CDFG determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFG jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the

USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFG.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCBs also issues water quality certifications in compliance with Section 401 of the CWA. The LRWQCB, through implementation of its 1995 Basin Plan and authority under Section 401 of the federal CWA, regulates activities within wetlands and waters of the United States and TRPA SEZs. The Basin Plan prohibits new disturbance/coverage within SEZs in the Lake Tahoe Basin. If the project affects SEZs, the LRWQCB would have to make all of the following findings for public service facilities:

- The project is necessary for public health, safety or environmental protection
- There is no reasonable alternative, including spans, that avoids or reduces the extent of encroachment in the SEZ
- Impacts are fully mitigated
- SEZ lands will be restored for the SEZ area developed or disturbed by the project

Although no specific TRPA thresholds exist for wetlands, the TRPA Code of Ordinances protects wetland resources in the region. In addition, the following vegetation threshold is applicable:

- 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.

2.15.2. Affected Environment

Prior to the preparation of this document, a Draft Program EIR was developed to consider cumulative impacts for eight water quality improvement projects along SR 89 and US 50. At that time, a Wetland Delineation Boundary was studied to inventory the presence of wetlands, USACE jurisdictional waters, other waters of the U.S., and SEZs. The Wetland Delineation Boundary included a broad study area that had a potential for use in the proposed projects as they proceeded further in design.

The current SR 89 Segment 1 project includes a more refined Project Environmental Study Limit, which is used to determine impacts of the proposed project on the previously identified wetland features (including jurisdictional and other waters of the U.S. as well as SEZs) within the more broadly defined Wetland Delineation Boundary.

2.15.2.1. Jurisdictional Wetlands

A total of 17.65 acres of potential jurisdictional wetlands were identified within the Wetland Delineation Boundary during the wetland delineation surveys. Wetlands were found in both forested and wet meadow habitat.

2.15.2.2. Non-Wetland Jurisdictional Waters of the U.S

A total of 5.86 acres of non-wetland waters of the U.S. (or other waters of the U.S.) were identified in the Wetland Delineation Boundary. These resources 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.

2.15.2.3. Stream Environment Zones

Based upon boundaries of TRPA-verified SEZs, a total of 52.23 acres of SEZs were identified within the Wetland Delineation Boundary. SEZ areas occur in the project vicinity near Grass Lake and along sections of the Upper Truckee River.

2.15.3. Impacts

Wetlands

Overlaying the project features on the mapped resources obtained from field surveys indicates that approximately 0.13 acre³ of wetlands could be permanently affected by the construction of proposed cut and fill activities and the paving of pullouts.

Project construction could also have temporary impacts on 0.38 acre of wetlands. Temporary impacts include potential sedimentation and compaction of wetlands during construction activities adjacent to wetland areas.

Potential indirect impacts could include erosion associated with construction. The contractor's use of construction equipment (moved to the project site from outside of the project area) has the potential to introduce and/or spread weed seeds in the area.

Jurisdictional Non-Wetland Waters of the U.S.

A total of 0.07 acre of potentially jurisdictional non-wetland waters of the U.S. will be affected by proposed construction activities. Temporary construction impacts would occur to an estimated 0.41 acre³ of non-jurisdictional waters of the U.S.

³ Impacts of less than 0.01 acre were omitted from the total.

Stream Environment Zones

A total of 3.43 acres of SEZs within the ESL will be affected by cut and fill activities and the paving of pullouts. Temporary impacts would occur to 4.22 acres of SEZs.

TRPA Considerations

With implementation of the measures listed in Section 2.15.4, the proposed project is consistent with Threshold V1 and with TRPA Code elements that protect wetland resources.

2.15.4. Avoidance, Minimization and/or Mitigation Measures

It is determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use. The preliminary project plans have been modified and/or revised to remove or change basins and drainage facilities that might affect these resources.

WE-1 Purchase of Credits

Impacts to wetlands, non-wetland jurisdictional waters of the U.S., and SEZs will be mitigated on-site.

WE-2 General Avoidance/Minimization Measures and BMPs

To ensure maximum avoidance, the measures listed below and included in their entirety in Section 2.20 will be followed.

- GE-01: Establishment of Environmentally Sensitive Areas (ESAs)
- GE-02: Construction Clean-up
- GE-03: Construction Scheduling (Project activities in jurisdictional wet areas will occur in the dry season, which is typically between July 15 and October 15 but depends on seasonal conditions)
- WQ-01: Avoidance of Aquatic Resources
- WQ-02: Timing of Aquatic Resource Activities
- WQ-03: Minimizing Disturbance of Aquatic Resources
- WQ-04: Erosion Control
- WQ-05: Prohibition of Construction Materials Entering Aquatic Resources
- WQ-06: On-Site Restoration
- HA-01: Avoidance of Habitat Disturbance
- HA-02: Revegetation of Disturbed Areas

- HA-06: Preservation of Existing Top Soil Layer
- WL-01: Ensure Fish Passage
- WL-02: Limit Vegetation Removal

2.16. Plant Species

2.16.1. Regulatory Setting

The USFWS and CDFG share regulatory responsibility for the protection of special-status plant species. Special-status species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the FESA and/or the California Endangered Species Act (CESA). Section 2.18 presents detailed information about threatened and endangered species.

This section discusses all other special-status plant species, including CDFG fully protected species and species of special concern, USFWS candidate species, and nonlisted California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at 16 USC Section 1531, et seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et seq. Caltrans projects are also subject to the Native Plant Protection Act (California Fish and Game Code Sections 1900–1913) and CEQA (PRC Sections 2100–21177).

The following TRPA thresholds apply to the project area:

- 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 30 inches dbh shall also be favored for retention because of their late seral attributes.
- V3: Maintain a minimum number of population sites for each of five sensitive plant species: 1) *Carex paucifructus*; 2) *Lewisia pygmaea logipetala*; 3) *Draba*

asterophora v. *macrocarpa*; 4) *Draba asterophora* v. *asterophora*; and 5) *Rorippa subumbellata*.

2.16.2. Affected Environment

Special-status plant species that are potentially present in the ESL 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
- California Natural Diversity Data Base (CNDDDB; April 2007)
- Forest Service 2004 Survey Data
- CNPS Inventory of Rare and Endangered Plants (online edition, v7-06a)
- USFWS Federally Endangered and Threatened Species List

Official species lists obtained from the USFWS for the 12 quad areas surrounding the ESL are included in Appendix F. Additionally, documented occurrence data were obtained from the CNDDDB April 2007 database surrounding the ESL (the 7.5-minute USGS within the quadrangles for Markleeville, Carson Pass, Caples Lake, Tragedy Spring, Minden, South Lake Tahoe, Freel Peak, Woodfords, Emerald Bay, Rockbound Valley, Pyramid Peak, and Echo Lake.

The following sensitive plant species were identified as having a potential to occur within the regional area, and were specifically surveyed for during the studies for this project: 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 oregonum*), marsh willowherb (*Epilobium palustre*), starved daisy (*Erigeron miser*), American manna grass (*Glyceria grandis*), short-leaved hulsea (*Hulsea brevifolia*), vein water lichen (*Hydrothyria venosa*), 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*), and felt-leaved (woolly) violet (*Viola tomentosa*).

2.16.3. Impacts

No sensitive plant species were found within the project study area during seasonal surveys completed in 2007. The project will not directly affect any special-status plants.

Shore sedge (*Carex limosa*) and marsh willowherb (*Epilobium palustre*) were identified near the study area. Shore sedge and marsh willowherb are both CNPS List 2 species. List 2 species are those that have been determined to be “rare, threatened, or endangered in California but are more common elsewhere.” These species are under protection of the Native Plant Protection Act as well as the California Endangered Species Act (CNPS 2007).

Construction activities within the ESL have the potential to indirectly affect shore sedge and marsh willowherb, as well as water bulrush (*Scirpus subterminalis*) and three-ranked hump moss (*Meesia triquetra*), both of which are known from CNDDDB records to occur adjacent to the ESL within Grass Lake. Indirect impacts are expected to be minimal. The potential for the project to directly or indirectly impact these species will be minimized or avoided through the implementation of the measures listed in Section 2.16.4.

Indirect impacts to special-status plant species may result from minor alternations in hydrological patterns and removal of vegetation from adjacent areas that may change shade and temperature patterns.

TPRA Considerations

The project is consistent with TRPA Thresholds V1 and V3. As described in Section 2.5.3, tree removal will comply with TRPA Code of Ordinances Chapter 71.

2.16.4. Avoidance, Minimization and/or Mitigation Measures

PL-1 General Avoidance/Minimization Measures and BMPs for Special-Status Plants

The measures listed below and included in their entirety in Section 2.20 will be implemented to avoid potential direct or indirect impacts to special-status plants.

- GE-01: Establishment of Environmentally Sensitive Areas
- GE-02: Construction Clean-up
- WQ-01: Avoidance of Aquatic Resources
- WQ-04: Erosion Control

- HA-01: Avoidance of Habitat Disturbance
- HA-02: Revegetation of Disturbed Areas
- HA-03: Construction Equipment Weed Control
- HA-04: Equipment Staging
- HA-05: Weed-Free Erosion Control Seed Mix/Stock
- HA-06: Preservation of Existing Top Soil Layer
- WL-02: Limit Vegetation Removal.

2.17. Animal Species

2.17.1. Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The USFWS, the National Marine Fisheries Service (NOAA Fisheries), and the CDFG are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with wildlife not listed or proposed for listing under CESA or FESA. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.18. All other special-status animal species are discussed here, including CDFG fully protected species and species of special concern, and USFWS candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- NEPA
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations pertaining to wildlife include the following:

- CEQA
- Sections 1601–1603 of the California Fish and Game Code
- Section 4150 and 4152 of the California Fish and Game Code

The following TRPA thresholds apply to the project area:

- 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*).

- W2: A non-degradation standard shall apply to wildlife habitat consisting of deciduous trees, wetlands, and meadows while providing for opportunities to increase the acreage of such riparian associations.
- F1: Maintain 75 miles of habitat rated excellent, 105 miles of good, and 38 miles of marginal stream habitat.
- F2: A non-degradation standard shall apply to fish habitat in Lake Tahoe.
- F3: Achieve the equivalent of 5,948 total acres of excellent habitat in Lake Tahoe.
- F4: Until in-stream flow standards are established in the Regional Plan to protect fishery values, a non-degradation standard shall apply to in-stream 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.

2.17.2. Affected Environment

This section provides information on sensitive wildlife species that are known to occur or may occur in the project vicinity. The following sources were reviewed to help define the potential for sensitive wildlife to occur within or near the project study area:

- USFWS Species List of Federal Endangered and Threatened Species occurring within the twelve 7.5-minute USGS quads surrounding the ESL (included in Appendix F)
- 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
- CNDDDB (April 2007). The 7.5-minute quarter quads included in the CNDDDB and USFWS review are Markleeville, Carson Pass, Caples Lake, Tragedy Spring, Minden, South Lake Tahoe, Freel Peak, Woodfords, Emerald Bay, Rockbound Valley, Pyramid Peak, and Echo Lake.
- Wildlife 2000, LTBMU 2003 and 2005

The following wildlife species of concern were either identified or considered to be present within or near the project area. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.18.

Northern Goshawk

The northern goshawk (*Accipiter gentilis*) is a CDFG species of special concern, an LTBMU sensitive species and management indicator species, and a TRPA special-interest species. TRPA has identified suitable northern goshawk nesting sites within 0.5 mile of the ESL near Big Meadow Creek. During the 2007 habitat assessment, potential northern goshawk foraging habitat was found throughout forested sections within the study area, but no northern goshawks were observed. Due to constant human disturbance along SR 89, it is unlikely for the northern goshawk to nest within the study area.

Blue Grouse

The blue grouse (*Dendragapus obscurus*) is an LTBMU management indicator species. During the June 2007 habitat assessment, blue grouse calls were heard near infiltration basin #21. Suitable habitat for the blue grouse exists within and adjacent to the study area in Douglas fir forests.

California Spotted Owl

The California spotted owl (*Strix occidentalis occidentalis*) is a CDFG species of special concern and an LTBMU sensitive species and management indicator species. The California spotted owl was not directly identified in the study area. However, several hooting calls potentially from a spotted owl were heard during field studies in the vicinity of Grass Lake, and suitable foraging habitat was present in the study area. There are TRPA-recorded detections of the California spotted owl within 0.25 mile of the study area, and a TRPA home range core area intersects the study area. Based on this information, the California spotted owl could nest within 0.25 mile of the study area from approximately Grass Lake Road to Luther Pass.

Brook Trout

The brook trout (*Salvelinus fontinalis*) is an LTBMU management indicator species. Brook trout were observed throughout streams, creeks, and rivers within the study area. Their presence can be assumed in Grass Lake, Grass Lake Creek, Big Meadow Creek, and Upper Truckee River.

Bats

California state law protects bats and their occupied roosts from harassment and destruction under California Fish and Game Code Sections 2000, 2002, 2014, and 4150 and in 14 California Code of Regulations 251.1. During the 2007 habitat surveys, bat refugia were identified at infiltration basin #21 among the large cracks in the granite. It is anticipated that tree-roosting bats may use the forested areas within the project area.

Sierra Nevada Snowshoe Hare

The Sierra Nevada snowshoe hare (*Lepus americanus tahoensis*) is a CDFG species of special concern. Sierra Nevada snowshoe hares are thought to be relatively uncommon within the project vicinity. However, suitable habitat was observed within the study area in the areas surrounding Big Meadow and along Christmas Valley. A mortality of a Sierra Nevada snowshoe hare was observed on the SR 89 roadway shoulder near Big Meadow during the June 2007 assessment, and tracks were observed in Christmas Valley. Big Meadow is expected to have an intact population. Christmas Valley is unlikely to support a sustained Sierra Nevada snowshoe hare population due to heavy human activity and pets (dogs and cats). Scattered thickets of brush or riparian cover suitable for cover, nesting, and foraging are located within and adjacent to the study area along the length of SR 89. Given the presence of suitable habitat, the project area is considered potentially occupied by the Sierra Nevada snowshoe hare.

Mule Deer

The mule deer (*Odocoileus hemionus*) is an LTBMU management indicator species and a TRPA special interest species. Signs of mule deer (tracks and scat) were observed in the study area during field surveys. The study area is considered utilized by mule deer.

Black Bear

The black bear (*Ursus americanus*) is an LTBMU management indicator species. Black bear signs (tracks) were present between Big Meadow Creek and Upper Truckee River during the June 2007 habitat assessment. No areas suitable for black bear dens were located in the project area.

Other Wildlife Species with Potential to Occur

The study area was determined to contain habitat that has the potential to support the following wildlife species. However, no records of sightings exist, and/or no

individuals or signs of presence were sighted during the field surveys. Because potential habitat is present, these species are considered to have the potential to occur. Section 2.17.4 includes measures to verify their absence prior to construction and/or avoid adverse effects.

- Mallards (*Anas platyrhynchos*) and other waterfowl species are protected under the Migratory Bird Treaty Act and are designated as LTBMU management indicator species and TRPA special-interest species. There is a potential for migratory birds to try to nest in vegetation within the study area between March 1 and August 15. Habitats for mallards and waterfowl exist within the open-water environments of perennial streams that cross the study area.
- Yellow warbler (*Dendroica petechia brewsteri*) is a CDFG species of special concern. Riparian habitat and shrubby vegetation suitable for nesting yellow warblers is present within the study area.
- Peregrine falcon (*Falco peregrinus* ssp. *anatum*) has been delisted by the federal government but is a fully protected endangered species in the State of California. Rocky cliff habitat suitable for peregrine falcon nesting is present outside of the ESL to the east of SR 89 near Grass Lake, Grass Lake Creek, Big Meadow, Big Meadow Creek, and the Upper Truckee River. There is one TRPA-identified threshold population in the vicinity of Grass Lake Creek; however, no falcons were observed in that area during the field surveys.
- Rainbow trout (*Oncorhynchus* (= *Salmo*) *mykiss* ssp. *gairderi*) is a CDFG species of special concern and an LTBMU management indicator species. No rainbow trout were observed during field surveys. Grass Lake Creek, Big Meadow Creek, and the Upper Truckee River have the potential to support rainbow trout within the study area.
- American badger (*Taxidea taxus*) is a California species of special concern. This species can occupy a wide range of habitats, and it likely occurs in undeveloped areas within and adjacent to the study area. However, no tracks or individuals were observed during the field surveys.

2.17.3. Impacts

The project will involve construction activities along the existing SR 89 at locations where drainage facilities and roadway improvements are planned. Impacts to existing vegetation, including trees, will be minimal, but vegetation may be removed where infiltration basins are proposed. As noted in Section 2.5.3, infiltration basins will be designed to minimize tree removal; however, if it is determined to be infeasible to

maintain the long-term health of a tree, it will be removed as part of basin construction. Some existing cut and fill slope modifications will be necessary. Other proposed facilities such as the maintenance pullouts and paved pullouts, sand traps, and retaining walls will be constructed relatively close to or within already disturbed areas along the shoulders of SR 89, and effects to habitat will be avoided or minimal.

TRPA Considerations

With implementation of the avoidance and minimization measures listed in Section 2.17.4, the proposed project is consistent with TRPA Thresholds W1, W2, and F1 through F5.

2.17.4. Avoidance, Minimization and/or Mitigation Measures

The following measures will be taken prior to and during construction to avoid or minimize direct and permanent effects to special-status wildlife and indirect effects to areas adjacent to the study area. Preconstruction surveys will be performed where habitat for sensitive species exists to verify species presence/absence and assess the need for additional avoidance and minimization measures. If species are determined to be present, seasonal construction restrictions will be required to avoid breeding seasons and other periods when wildlife species are vulnerable. Construction contract specifications will include use of ESAs, shown on the maps in Appendix A, construction clean-up, weed control, restrictions on in-stream work, erosion control, and restoration of disturbed SEZs. Measures for specific species identified in Section 2.17.2 are summarized below.

AN-1 Preconstruction Surveys for Avian Species

No nesting of special-status birds was observed during the field surveys. However, potential habitat was identified, and TRPA has recorded habitat or occurrences for some species within or near the project study area. To ensure that species of concern are not using the study area at the time construction proceeds, preconstruction surveys will be performed within the project limits to verify absence. Potential buffer areas may be imposed on construction activities to minimize impacts if species are found to be present.

- Northern goshawk: 0.5-mile range of the ESL. If nesting northern goshawks are identified, construction will be prohibited within a 0.5-mile range of the nest during the breeding season (February 15 to September 15 or until fledging occurs).

- Blue grouse, yellow warbler, waterfowl: 150 feet of any construction-related activities during the nesting season. If nests are identified, construction activities will be prohibited within 150 feet of the nest during the nesting season (March 1 to September 1). Vegetation removal will be prohibited during the nesting season to minimize the effect to warblers and other migratory birds that have not yet started nesting. Vegetation that is removed outside of the nesting season will be restored to its preconstruction condition.
- California spotted owl: 0.25-mile range of any construction activities. If nests are identified, construction will be prohibited within 0.25 mile of the nest sites during the nesting season (between March 1 and September 1). Construction will also be prohibited during this time within 0.25 mile of the Hawley Grade Home Range Core Area, a California spotted owl habitat area designated by the Forest Service and TRPA. This area is located along the Upper Truckee River upstream of the confluence with Grass Lake Creek and intersects the ESL.
- Peregrine falcon: 0.25-mile range of the ESL where suitable habitat is present. If nests are found, construction will be prohibited within 0.25 mile of the nest during the nesting season (February 1 to August 15).

AN-2 General Measures and BMPs for Avian Species

The following general avoidance/minimization measures and BMPs are detailed in Section 2.20:

- HA-01: Avoidance of Habitat Disturbance
- HA-02: Revegetation of Disturbed Areas
- WL-02: Limit Vegetation Removal
- WL-03: Migratory Bird Preconstruction Surveys
- WL-04: Raptor and Owl Surveys

AN-3 General Measures and BMPs for Aquatic Species

The following general avoidance/minimization measures and BMPs are detailed in Section 2.20:

- WQ-01: Avoidance of Aquatic Resources
- WQ-02: Timing of Aquatic Resource Activities
- WQ-03: Minimizing Disturbance of Aquatic Resources
- WQ-04: Erosion Control
- WQ-05: Prohibition of Construction Materials Entering Aquatic Resources
- WL-01: Ensure Fish Passage

- WL-02: Limit Vegetation Removal

AN-4 General Measures and BMPs for Mammals

The following general avoidance/minimization measures and BMPs are detailed in Section 2.20:

- WQ-01: Avoidance of Aquatic Resources
- WQ-03: Minimizing Disturbance of Aquatic Resources
- HA-01: Avoidance of Habitat Disturbance
- HA-02: Revegetation of Disturbed Areas
- WL-02: Limit Vegetation Removal
- WL-05: Roosting, Denning, or Burrowing Mammal Surveys

AN-5 Preconstruction Survey for Sierra Nevada Snowshoe Hare

Project construction activities have the potential to impact forested and riparian areas that may provide cover for Sierra Nevada snowshoe hare. Preconstruction surveys will be conducted for Sierra Nevada snowshoe hare in riparian areas where nest depressions may be located within 250 feet of construction activities. Where Sierra Nevada snowshoe hare nest depressions are identified, construction within 250 feet of these areas will be prohibited between February 1 and July 1, and construction will be limited to daylight hours.

2.18. Threatened and Endangered Species

This section describes the potential of the project to affect species that are listed or proposed for listing under the FESA or CESA.

2.18.1. Regulatory Setting

The primary federal law protecting threatened and endangered species is the FESA (16 USC Section 1531, et seq.; see also 50 CFR Part 402). This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of the FESA, federal agencies such as FHWA are required to consult with the USFWS and NOAA Fisheries to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome

of consultation under Section 7 is a Biological Opinion or an incidental take permit. Section 3 of the FESA defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.”

California has enacted a similar law at the state level, the CESA (California Fish and Game Code, Section 2050 et seq.). The CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The CDFG is the agency responsible for implementing CESA. Section 2081 of the California Fish and Game Code prohibits take of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the California Fish and Game Code as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” The CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFG. For projects requiring a Biological Opinion under Section 7 of the FESA, the CDFG may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

The following TRPA threshold applies to the project area:

- 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 Haliaeetus*); 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*).

2.18.2. Affected Environment

Each federal agency will confer with the USFWS and NOAA Fisheries on any action that is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat. The consultation process is designed to assist the federal agency and any applicant in identifying and resolving potential conflicts at an early stage in the planning process. The following consultation and research steps were completed to identify the status and potential to occur for any protected species within or near the project area.

A species list for the project vicinity was obtained from the online database of the Sacramento field office of the USFWS in May 2007. The project vicinity includes the following 12 USGS 7.5-minute topographic quads: Markleeville, Carson Pass, Caples Lake, Tragedy Spring, Minden, South Lake Tahoe, Freel Peak, Woodfords, Emerald Bay, Rockbound Valley, Pyramid Peak, and Echo Lake. The USFWS species list is included in Appendix F.

In addition, LTBMU staff was contacted in May 2007 regarding species presence in the project vicinity and the availability and use of digital occurrence information. Surveys for sensitive species and habitat were conducted in June and August 2007.

Based on review of the species list, consultation, and surveys, the following federal and state-listed species were determined to have the potential to occur in the regional area, and were evaluated for their potential presence within the project limits (see Section 2.18.3):

- **Willow flycatcher** (*Empidonax traillii* ssp. *brewsteri*) – State-listed endangered species; LTBMU sensitive species and management indicator species
- **Bald eagle** (*Haliaeetus leucocephalus*) – Fully protected, state-listed endangered species; LTBMU management indicator species; TRPA special-interest species
- **Bank swallow** (*Riparia riparia*) – State-listed threatened species
- **Lahontan cutthroat trout** (*Oncorhynchus clarki henshawi*) – Federally listed threatened species; CDFG species of special concern; LTBMU management indicator species; TRPA special-interest species
- **Sierra Nevada red fox** (*Vulpes vulpes necator*) – State-listed threatened species; LTBMU sensitive species.

2.18.3. Impacts

Willow flycatcher was determined to be present in willow and alder thickets in the study area during the June 2007 survey. Habitat is present near Grass Lake, Grass Lake Creek, Big Meadow, Big Meadow Creek, and in wet drainages in confluence with Grass Lake Creek and the Upper Truckee River. In addition, TRPA has identified several willow flycatchers within the ESL, and the CNDDDB lists numerous occurrences within the project vicinity (CDFG 2007). Construction activities have the potential to temporarily disturb this species. Measures to avoid effects are discussed in Section 2.18.4.

Lahontan cutthroat trout habitat is present in the Upper Truckee River. The river will not be directly affected by this project, but tributary drainages to the Upper

Truckee River are crossed by this segment of SR 89. This species would be potentially affected if where waterflow and the species are present in the tributary drainages to the Upper Truckee River that are crossed by this project, and work is proposed on existing culverts at these crossings. Measures to avoid effects are discussed in Section 2.18.4.

With the exception of the willow flycatcher and Lahontan cutthroat trout, no other federally or state-listed species identified in Section 2.18.2 were observed within or near the project study area. The following species were determined to not be present or would not be affected by the project:

- Bald eagle – Habitat within the study area was determined to be unsuitable for wintering or nesting eagles. In addition, no bald eagles were sighted within or near the study area during the 2007 surveys, and there are no observed or recorded (CNDDDB or TRPA) wintering or nest sites that could be affected by the project.
- Bank swallow – Potentially suitable habitat is present along the Upper Truckee River, but no project work is proposed in this waterway. All other creeks or waterways lacked suitable habitat for this species.
- Sierra Nevada red fox – The habitat assessment indicates that the study area is not occupied by the Sierra Nevada red fox. Additionally, the species was not found during Forest Service carnivore surveys. No signs (track, scat, etc.) or sites suitable for den sites for this species were observed.

TRPA Considerations

No threatened or endangered species identified in TRPA Threshold W1 were determined to be present in the ESL.

2.18.4. Avoidance, Minimization and/or Mitigation Measures

TE-1 ESA Designation and Other Measures for Willow Flycatcher

Locations of potential willow flycatcher habitat have been identified, and ESAs are included on the maps in Appendix A. These areas represent potential locations where project construction could affect breeding. To avoid impacts to this species, preconstruction surveys will be performed to verify actual use of the habitat prior to construction. Work will be prohibited in the ESAs during the nesting season (between June 1 and September 1) or until any nesting activity is completed. Any willow flycatcher habitat that is disturbed by construction activities outside of the nesting season will be restored to its preconstruction condition.

In addition, the following general avoidance/minimization measures and BMPs will be implemented (see Section 2.20):

- HA-01: Avoidance of Habitat Disturbance
- HA-02: Revegetation of Disturbed Areas
- WL-02: Limit Vegetation Removal
- WL-03: Migratory Bird Preconstruction Surveys (as described above)

TE-2 Measures for Lahontan Cutthroat Trout

Stream dewatering and construction of cofferdams may be necessary for some project construction activities, such as replacement of culverts associated with perennial waters. Cofferdams will be constructed from sandbags filled with clean gravel. Remaining water within cofferdams will be dewatered following NOAA Fisheries fish screening criteria (screen openings no larger than 3/32 inches and approach velocity less than 0.33 feet per second). Any fish collected within cofferdams will be counted, measured, and released in appropriate habitat downstream of the project area by a qualified biologist. Diversion pipes will be screened to prevent any intake of fish upstream of the diversion. Water will be pumped across the road in a covered hose to protect it from traffic and returned to the channel just below the work areas.

In addition, the following general avoidance and minimization measures are proposed for the Lahontan cutthroat trout (see Section 2.20):

- WQ-01: Avoidance of Aquatic Resources
- WQ-02: Timing of Aquatic Resource Activities
- WQ-03: Minimizing Disturbance of Aquatic Resources
- WQ-04: Erosion Control
- WQ-05: Prohibition of Construction Materials Entering Aquatic Resources
- WL-01: Ensure Fish Passage (as described above)

TE-3 Avoidance of Bald Eagle and Bank Swallow

No bald eagle or bank swallow nesting activity was identified in the study area during the field surveys. To verify that these species are not present prior to construction, a preconstruction survey will be completed. If bald eagle nesting activity is identified, a 0.5-mile construction buffer will be implemented during the nesting season (January 1 through September 1). If bank swallow nests are found, a 150-foot buffer will be established around nests, and construction will be prohibited during the breeding season (April 1 to September 1).

TE-4 Measures for Sierra Nevada Red Fox

The preconstruction surveys will include observation for Sierra Nevada red fox dens. Construction will be prohibited within 250 feet of an identified active den during the breeding season (February 1 to May 31). Open trenches or other construction features that pose a risk of trapping animals will have escape ramps installed or will be covered at the end of each construction day.

In addition to the above specific measures the following general avoidance and minimization efforts (described in detail in Section 2.20) are applicable for the Sierra Nevada red fox:

- HA-01: Avoidance of Habitat Disturbance
- HA-02: Revegetation of Disturbed Areas
- WL-02: Limit Vegetation Removal
- WL-05: Roosting, Denning, or Burrowing Mammal Surveys (as described above)

2.19. Invasive Species

2.19.1. Regulatory Setting

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

The U.S. Department of Transportation has issued policy guidelines that provide a framework for addressing roadside vegetation management issues for construction activities and maintenance programs. Region 5 of the Forest Service has implemented the provisions of Executive Order 13112 specific to noxious weed species into its Sierra Nevada Forest Plan, and these measures will be implemented by Caltrans. The Sierra Nevada Forest Plan Amendment (Forest Service 2001) requires a noxious weed risk assessment for any ground-disturbing activities to prevent the spread of noxious weeds into the surrounding area. The assessment would determine if project

activities have a low, moderate, or high risk for the spread of noxious weeds (defined as plants designated as noxious by federal or state law).

2.19.2. Affected Environment

No established infestations of noxious weeds were detected in the project ESL. One species on the state noxious weed list was observed in the study area: klamathweed (*Hypericum perforatum*). Scattered individuals of klamathweed occur in the vicinity of Big Meadow Creek.

2.19.3. Impacts

The amount of disturbance that will result from project construction is relatively limited, so construction-related habitat changes that could increase noxious weed growth (reduced shade and soil cover) will be minor. Project-related impacts from noxious weed spread are not likely because relatively few noxious weeds are known from the project area. With implementation of the measures listed in Section 2.19.4, the proposed project has a low risk of spreading invasive klamathweed.

2.19.4. Avoidance, Minimization or Mitigation Measures

The following measures, which are described in Section 2.20, will be implemented to avoid the spread of invasive weeds.

- HA-03: Construction Equipment Weed Control
- HA-05: Weed-Free Erosion Control Seed Mix/Stock
- WC-04: Erosion Control

2.20. Avoidance, Minimization, and Mitigation Measures for Biological Resources

The following proposed avoidance and minimization measures are standard BMPs that have been tailored for the proposed project and project area. Table 2.20-1 does not include species-specific measures. Species-specific measures (such as buffer zone size and duration of construction restrictions) are described in Sections 2.14 through 2.18.

Table 2.20-1 General Avoidance and Minimization Measures, and Best Management Practices

Measure	Responsible for Implementation	Description	Notes
General			
GE-01: Establishment of Environmentally Sensitive Areas (ESAs)	Contractor and Caltrans Resident Engineer	ESAs will be designated and fenced off prior to the beginning of construction activities. No work or equipment operation will take place in ESAs in any construction season.	ESAs will remain in place until all project construction activities have been completed. ESAs are to be determined by a qualified biologist.
GE-02: Construction Clean-up	Contractor	All temporary fill and construction debris will be removed from the ESL after completion of construction activities.	Fill and debris removal will take place upon completion of construction activities.
GE-03: Construction Scheduling	Caltrans Project Management and Contractor	Construction will be timed to avoid impacts to sensitive biological resources.	The exact dates will vary for each resource; see Sections 2.14 through 2.18.
Water Quality			
WQ-01: Avoidance of Aquatic Resources	Contractor and Caltrans Resident Engineer	All work within and near wetlands, other waters of the US, SEZs, and any other wet areas will be avoided where possible.	Areas containing aquatic resources will be fenced off as ESAs until project construction activities have been completed.
WQ-02: Timing of Aquatic Resource Activities	Caltrans Project Management and Contractor	Impacts to wetland and other waters associated with construction activities will be restricted to the dry season.	The dry season typically occurs between July 15 and October 15 but depends upon seasonal conditions.
WQ-03: Minimizing Disturbance of Aquatic Resources	Contractor and Caltrans Resident Engineer	Temporarily disturbed aquatic resources will be returned to preconstruction condition at the end of each construction season.	This may require grading temporary access roads, removing access roads at the end of each construction season, re-contouring stream banks and adjacent areas, covering bare ground with mulch, and/or applying revegetation measures.
WQ-04: Erosion Control	Contractor and Caltrans Resident Engineer	Erosion control will be implemented and in place prior to, during, and after construction to ensure that no silt or sediment enters surface water or channels.	Devices used for erosion control will be weed free as described in measure HA-05.

Table 2.20-1 General Avoidance and Minimization Measures, and Best Management Practices (continued)

Measure	Responsible for Implementation	Description	Notes
WQ-05: Prohibition of Construction Materials Entering Aquatic Resources	Contractor and Caltrans Resident Engineer	Construction material and/or debris are prohibited from entering surface waters or their channels.	Includes all materials related to construction, (e.g., oil, greasy materials, asphalt-concrete, etc.) Materials should not be placed where they have potential to enter aquatic resources.
WQ-06: On-Site Restoration	Contractor and Caltrans Resident Engineer or Biologist	Any permanent impacts to wetlands, other waters of the U.S., SEZs or sensitive habitats will be mitigated through on-site restoration, where possible.	On-site restoration will be completed in coordination with the USACE and/or TRPA.
Habitat			
HA-01: Avoidance of Habitat Disturbance	Contractor and Caltrans Resident Engineer	All disturbances of vegetative/woody habitat will be avoided where possible.	
HA-02: Revegetation of Disturbed Areas	Contractor and Caltrans Resident Engineer (implement in field); Caltrans Landscape Engineer or Biologist (post-construction monitoring).	All disturbed areas will be revegetated with TRPA-approved, appropriate combinations of native species upon completion of construction activities.	The appropriate combinations of native species will be determined by a qualified biologist.
HA-03: Construction Equipment Weed Control	Contractor and Caltrans Resident Engineer.	Construction equipment will be cleaned of potential noxious weed sources before entry into the ESL.	After each exposure to noxious weed sources, construction equipment should be cleaned in a manner that does not facilitate seed dispersal.
HA-04: Equipment Staging	Contractor and Caltrans Resident Engineer.	Construction equipment will be staged in areas where it will not be exposed to noxious weed sources and where materials such as oil, gas, etc. from equipment do not have the potential to impact biological resources.	These areas should be delineated on construction plans and should not impact any biological resources.
HA-05: Weed-Free Erosion Control Seed Mix/Stock	Contractor and Caltrans Resident Engineer (implemented in field); Caltrans Landscape Engineer or Biologist (post-construction monitoring).	Only TRPA-approved plant species will be used in any erosion control seed mix or stock. Certified weed-free straw and weed-free hydroseed mulch will be used for erosion control activities.	

Table 2.20-1 General Avoidance and Minimization Measures, and Best Management Practices (continued)

Measure	Responsible for Implementation	Description	Notes
HA-06: Preservation of Existing Top Soil Layer	Contractor and Caltrans Landscape Engineer or Biologist	Where excavation is required, the excavated topsoil will be preserved and replaced upon completion of construction activities.	Retention of excavated topsoil should aid in maintaining the existing seed bank and speed revegetation efforts.
Wildlife			
WL-01: Ensure Fish Passage	Contractor and Caltrans Resident Engineer or Biologist	NOAA Fisheries fish screening criteria will be followed when dewatering activities or construction of cofferdams is required. Any fish collected within cofferdams will be counted, measured, and released in appropriate habitat downstream of the project area. Diversion pipes will be screened to prevent the intake of fish.	NOAA Fisheries fish screening criteria include screen openings no larger than 3/32 inch and an approach velocity of less than 0.33 foot per second. Suitable habitat for fish release is to be determined by a qualified biologist.
WL-02: Limit Vegetation Removal	Contractor and Caltrans Resident Engineer	Vegetation removal will be kept to a minimum throughout project construction.	Woody vegetation should be removed between September 1 and October 15 to minimize impacts to wildlife.
WL-03: Migratory Bird Preconstruction Surveys	Caltrans Biologist	Preconstruction surveys for nesting migratory birds will be conducted prior to the start of construction activities.	Surveys will be conducted within 150 feet of construction activities. If nests are found, a 150-foot ESA buffer will be imposed during the nesting season (March 1 to September 1).
WL-04: Raptor and Owl Surveys	Caltrans Biologist	Preconstruction surveys for nesting raptors and owls will be conducted prior to the start of construction activities. Construction-related activities will be prohibited within the TRPA-designated buffer zone for each raptor or owl species.	The survey buffer zone for California spotted owl is described in Section 2.17.4. If nesting owls are observed within the buffer zone during preconstruction surveys, no construction will take place until fledging occurs.

Table 2.20-1 General Avoidance and Minimization Measures, and Best Management Practices (concluded)

Measure	Responsible for Implementation	Description	Notes
WL-05: Roosting, Denning, or Burrowing Mammal Surveys	Caltrans Biologist	Preconstruction surveys will be conducted within 30 days of the start of construction.	Surveys will be conducted within the extent of the ESL. If any sensitive species roosts, dens, or burrows are found, CDFG or USFWS will be contacted for guidance on how to proceed.
WL-06: Amphibian Surveys	Caltrans Biologist	Focused surveys for special-status amphibians will be conducted within 30 days of the start of construction activities for each construction season.	If a special-status amphibian is identified, the appropriate agency will be contacted for further guidance. Surveys should be completed prior to July 15 of each construction season.

2.21. Vector Control

In 1963, El Dorado County formed a service area governed by the Board of Supervisors in response to community complaints about pest mosquitoes. El Dorado County’s Tahoe District became a Vector Control District in 1980. The District has a service area of 195 square miles from the crest of the Sierra Nevada mountain range near Echo Summit to the shore of Lake Tahoe in both the City of South Lake Tahoe and unincorporated El Dorado County.

The climate, topography, and plant communities of the Tahoe Basin provide an abundance and variety of larval mosquito habitats. The restoration of SEZs has created additional mosquito habitat. The mosquito population in the Tahoe Basin is most active in the spring and early summer. Each mosquito species has a season when it is most active and a range of preferred hosts. All mosquito species are potential sources of organisms that can cause disease to pets, domestic animals, wildlife, or humans.

Vector control is not addressed in the El Dorado County Ordinance Code; however, the Vector Control District Web site recommends identifying and eliminating all

sources of standing water that can support mosquito breeding (El Dorado County Environmental Management 2007).

The proposed project includes infiltration basins that will hold storm water runoff so it can infiltrate into the ground below. These facilities will temporarily hold standing water. Caltrans design requirements impose a 3-day (72-hour) limit on how long a drainage facility can hold standing water (Caltrans 2007c). This criterion will be implemented as part of project design to avoid the potential for the basins to provide breeding habitat for mosquitoes.

Cumulative Impacts

2.22. Cumulative Impacts of Proposed Project and Other Future Actions

2.22.1. Regulatory Setting

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

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

Section 15130 of the CEQA Guidelines describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts under CEQA appears in Section 15355

of the CEQA Guidelines. A definition of cumulative impacts under NEPA appears in 40 CFR 1508.7 of the Council on Environmental Quality Regulations.

2.22.2. Affected Environment

A Draft Program EIR was prepared in June 2007 that addressed the overall impacts associated with proposed water quality improvements on five segments of SR 89 between Luther Pass and Tahoma and three segments of US 50 between Echo Summit and Stateline. The Draft Program EIR evaluated the potential for cumulative effects resulting from the program and other approved and proposed projects along or in the vicinity of these highway segments. In all, 76 projects in the region are planned or under way, ranging from residential and commercial development to bicycle and pedestrian facilities. In addition, projects conducted as part of the Lake Tahoe EIP in areas including air quality/transportation, fisheries, recreation, scenic resources, soil conservation/SEZ, vegetation, water quality, and wildlife projects are planned or under way in the study area for the Draft Program EIR.

This segment of SR 89 is within the Upper Truckee River Watershed, which is the cumulative impact study area for this highway segment. This section summarizes the identified projects in the vicinity of SR 89 Segment 1 that could have the potential for cumulative environmental impacts.

2.22.2.1. TRPA EIP Projects

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 5 to 7 years, as shown in Table 2.22-1. Other safety and operational projects are also planned within this time frame, including rock retaining wall and slope erosion control projects at Echo Summit on US 50.

Table 2.22-1 Planned EIP Projects, 2005–2012

Project Location	County	Highway
Echo Summit to 1.1 miles east of Echo Summit	EI Dorado	50
0.2 miles east of Echo Summit to Meyers Road	EI Dorado	50
Meyers Road to Incline Road	EI Dorado	50
Airport Road to SR 89 North “Y”	EI Dorado	50
SR 89 North “Y” to Trout Creek	EI Dorado	50
Trout Creek to Ski Run Boulevard	EI Dorado	50
Ski Run Boulevard to State Line	EI Dorado	50

Table 2.22-1 Planned EIP Projects, 2005–2012 (concluded)

Project Location	County	Highway
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 0.6 miles south of Brockway Summit	Placer	267
0.6 miles south of Brockway Summit to Stewart Way	Placer	267
Stewart Way to SR 28	Placer	267

Source: Caltrans 2005b

El Dorado County Projects

Several projects in El Dorado County in or near the Upper Truckee Watershed are planned or proposed:

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 *Lake Tahoe Regional Bicycle and Pedestrian Master Plan* (Tahoe Metropolitan Planning Organization 2006).

Dead Tree Removal – US 50 and Sawmill Road

This project would remove dead trees and reduce hazardous fuels on 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.

Angora 3 Erosion Control Project and Angora Creek Fisheries Enhancement Project

El Dorado County proposes to construct and maintain conveyance and storm water treatment facilities to address water quality and erosion issues in the project area. The Angora 3 Erosion Control Project and Angora Creek Fisheries Enhancement Project

include the improvement of culverts under Lake Tahoe Boulevard to enhance fish habitat in Angora Creek. Both projects are considered environmental improvements as documented in the Lake Tahoe EIP.

City of South Lake Tahoe Projects

The South Lake Tahoe Planning Department was contacted regarding planned and proposed projects within the city limits. Table 2.22-2 lists all approved and proposed projects in South Lake Tahoe.

Table 2.22-2 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, 93,448 ft ² convention center, 46,526 ft ² of retail, 30,142 ft ² nightclub/restaurant/bar	May 2007–May 2009	Hotel condos, convention center, retail, restaurant
Marriott TimberLodge Phase 3	4100 Lake Tahoe Blvd.	57 units w/ 52 lockouts	2007 - 2008	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.	16,129 ft ² of floor area existing, 21,310 ft ² after rebuild	Fall 2006– Summer 2008	Demo existing shopping center and rebuild larger center with retail and restaurant

2.22.3. Impacts

The following is a qualitative assessment regarding the SR 89 Segment 1 project’s contribution of impacts to those of other actions in the southern Lake Tahoe area.

The SR 89 Segment 1 project would not contribute to permanent 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. The project is therefore not expected to result in permanent or long-term adverse effects to the physical or biological environment or to community resources.

The projects identified generally consist of bicycle and pedestrian paths, water quality improvement and erosion control projects, and proposed residential construction at various locations, including the City of South Lake Tahoe area. The following

summarizes the potential cumulative impacts from the SR 89 Segment 1 project and the other projects identified.

2.22.3.1. Vegetation

The SR 89 Segment 1 project will require some vegetation removal for site preparation at proposed basins, and 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 along the roadway or basin location cannot be avoided. Any proposed loss of trees should be in conformance with TRPA goals and policies. Similarly, other proposed projects would be expected to minimize tree and vegetation removal. Overall, neither the proposed project nor the other projects identified would be expected to substantially alter the species richness, relative abundance, and pattern of vegetation adjacent to SR 89 or southern Lake Tahoe area.

2.22.3.2. Wildlife and Fisheries

Similarly, the removal of vegetation adjacent to SR 89 is unlikely to contribute to adverse cumulative impacts to wildlife species, including migratory birds and special-status or management indicator species. The loss of woody vegetation caused by the project 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 southern Lake Tahoe area. Therefore, the SR 89 Segment 1 project is not expected to result in an adverse cumulative impact to wildlife.

The project is not expected to have permanent adverse impacts on the movement of fish and other aquatic organisms along or across 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. The proposed project is not expected to create new barriers to aquatic migration.

A number of EIP projects proposed in the southern Lake Tahoe area are expected to have direct beneficial impacts to wildlife and fisheries resources. Table 2.22-3 summarizes EIP projects proposed in the South Lake Tahoe region that are expected to result in direct beneficial impacts to wildlife and fisheries.

Table 2.22-3 EIP Projects Beneficial to Wildlife and Fisheries Resources in the South Lake Tahoe Area

EIP Category	Project Name	EIP Project No.	Expected Environmental Benefit
Fisheries	Meeks Creek Phase II – Stream Habitat Restoration	700	6.5 miles stream improved to excellent
	Habitat Restoration – General Creek Improvements	899	2.9 miles stream improved to good
	Habitat Restoration – Eagle Creek Migratory	900	0.3 miles stream improved to excellent
	Habitat Restoration – Lonely Gulch Creek Improvements	901	2.0 miles stream improved to good
	Habitat Restoration – Tallac Creek Improvements	902	4.1 miles stream improved to good
	Habitat Restoration – Taylor Creek Improvements	903	2.0 miles stream improved to excellent
	Lake Habitat Restoration – CSLT/EI Dorado County	973	48 acres of in-lake fish habitat restored.
Soil Conservation/ SEZ	Restore SEZ – El Dorado County	650	40 acres restored
	General Creek Stream Bank Stabilization Project	936	1 acre restored
	Meeks Bay Marina SEZ Fill Removal and Bank Stabilization	953	0.45 acres restored
Vegetation	Habitat Protection – Tahoe Yellow Cress, Blackwood/County Park	976	0.10 acre 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
Water Quality	Lower Ward Valley/Pineland Ecp	219	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	3.3 acres improved
	Chambers Lodge	731	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	400 acres improved
	Meeks Creek Riparian Habitat Improvement	605	1 mile stream improved to excellent
	Tallac Creek/Marsh Restoration	10044	3 acres improved
	Wildlife Habitat Restoration at Tahoe Basin State Parks	10083	50 acres improved

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, measures must be provided for any adverse impacts to lower land classifications, including SEZs. The SR 89 Segment 1 water quality improvement project will have minimal impacts to SEZs, and the project design will continue to be refined to further reduce or avoid these impacts. 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 project.

2.22.3.3. Traffic

No other projects have been identified that might overlap in time or place and create a cumulative traffic impact in this section of SR 89. Any projects involving utility and road rehabilitation by the Nevada Department of Transportation would be well outside of the study area for this project. Any road rehabilitation work scheduled by Caltrans would be coordinated with the water quality improvements, to consolidate construction activities.

2.22.4. Avoidance, Minimization, and Mitigation Measures

Caltrans will undertake a series of water quality improvement projects along other segments of SR 89 as well as US 50, and will take measures to minimize the potential for cumulative impacts. Scheduling of projects will be coordinated to avoid overlapping construction activities within close proximity. Notification will be provided to the community to allow planning for construction activities.