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

3.8.1 Environmental Setting

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 Although USEPA regulations may not be superseded, both state and local regulations may be more stringent than federal air quality regulations.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

3.8.1.1 Air Quality Standards

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 The new 8-hour O_3 standard has replaced the 1-hour O_3 standard, which has been revoked for the region.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

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

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

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

Table 3.8-1
Federal and California Ambient Air Quality Standards

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

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

μg/m^3 = microgram(s) per cubic meter
ppm = parts per million

Table 3.8-2
Maximum Measured Pollutant Concentrations at Echo Summit

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

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

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

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

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

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

3.8.1.2 Air Quality in the Lake Tahoe Air Basin

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

Ozone

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

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

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

Particulate Matter

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

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

Carbon Monoxide

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

Nitrogen Dioxide

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

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

Sulfur Dioxide

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

3.8.2 Regulatory Setting

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

3.8.2.1 Federal

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

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

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

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

Note: Partial listing from 40 CFR 93.126.

3.8.2.2 State

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

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

Significance Criteria

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

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

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

3.8.2.3 Regional

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

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

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

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

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

3.8.3 Impacts

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

3.8.3.1 CEQA Considerations

Construction

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

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

Operation

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

3.8.3.2 TRPA Considerations

Construction

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

Operation

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

3.8.3.3 No Project Alternative

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

3.8.4 Avoidance, Minimization, and Mitigation

3.8.4.1 Construction

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

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

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

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

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

3.8.4.2 Operation

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

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

3.9.1 Environmental Setting

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

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

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

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

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

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

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

3.9.2 Regulatory Setting

3.9.2.1 Federal and State

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

3.9.2.2 State

Significance Criteria

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

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

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

3.9.2.3 Regional

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

3.9.3 Impacts

3.9.3.1 CEQA Considerations

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

Construction Phase

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

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

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

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

Operational Phase

No impacts related to Program operation are anticipated.

3.9.3.2 TRPA Considerations

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

3.9.3.3 No Project Alternative

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

3.9.4 Avoidance, Minimization, and Mitigation

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

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

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

3.10.1 Environmental Setting

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

3.10.1.1 Physical Setting

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

3.10.1.2 Human-Made and Natural Features

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

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

3.10.1.3 Site Geology

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

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

3.10.1.4 Faulting and Seismicity

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

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

3.10.1.5 Soils

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

3.10.2 Regulatory Setting

3.10.2.1 State

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

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

Significance Criteria

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

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

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

3.10.2.2 Regional

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

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

TRPA Thresholds

The following TRPA Thresholds apply for soil conservation:

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

3.10.3 Impacts

3.10.3.1 CEQA Considerations

Erosion and Landslide Hazard

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

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

Groundwater Seepage

Depending on the time of year, seepage may be encountered in rock fractures or road cuts. Seepage and groundwater conditions will vary based on rainfall, snowmelt, seasonal and diurnal cycles, pumping, construction activities, and water levels in Lake Tahoe and the Upper Truckee River. Program-related construction activities have the potential to result in additional groundwater seepage, which could mobilize fine sediment.

3.10.3.2 TRPA Considerations

Impervious Coverage

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

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

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

3.10.3.3 No Project Alternative

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

3.10.4 Avoidance, Minimization, and Mitigation

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

- Removal of excess land coverage followed by site restoration
- Implementation of BMPs to minimize runoff and soil

- Protection of native vegetation
- Revegetation of disturbed lands

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