

## **9 GEOLOGY, SOILS, AND LAND CAPABILITY AND COVERAGE**

This chapter discusses the regulatory guidance for earth resources and evaluates potential adverse environmental effects related to geology, soils, seismic conditions, and land capability and coverage associated with implementation of the proposed project. The analysis includes a description of existing conditions, a discussion of any changes in or to geologic conditions, relevant soil properties as they relate to geotechnical issues, and associated elements of land capability and coverage. Planning guidelines established by TRPA, Placer County, and the State CEQA Guidelines provide the regulatory framework that allow for the assessment of potential environmental effects to these resources. Potential environmental effects related to water quality resulting from soil erosion and other stormwater issues are addressed in Chapter 8, “Hydrology and Water Quality.”

The examination of geology, soils, seismic hazards, and land capability and coverage is based on information from: (1) the review of academic research and available information published by local, state and federal agencies; and (2) the Geotechnical Investigation Report (Kleinfelder 2001) (Appendix D); and (3) the Environmental Impact Assessment Questionnaire (Appendix A).

### **9.1 AFFECTED ENVIRONMENT**

#### **9.1.1 GEOLOGY**

The Lake Tahoe Basin is located in the northern Sierra Nevada, between the Sierra crest to the west and the Carson Range to the east. The Sierra Nevada is the most prominent mountain range in California. The Lake Tahoe Basin was formed over two million years ago by a combination of faulting and volcanism. As a result, the basin contains a combination of granitic, metamorphic, and volcanic rock. The predominant bedrock in the basin is Cretaceous granodiorite of the Sierra Nevada batholith. Pre-Cretaceous metamorphic rocks are found in localized areas, and volcanic andesitic mudflows and lava extend from the top of Martis Peak to the northern lakeshore.

Over the past 1.5 million years, the Lake Tahoe Region has been altered by glacial activity, and most of the landforms surrounding the lake are a result of glaciation. During glacial activities, valley glaciers dammed the Truckee River Canyon, raising the water level of Lake Tahoe. Lacustrine sediment deposits accumulated in the bays and canyons around the lake as a result of rising of lake levels. Rocks found near the surface in the Lake Tahoe Basin are of many types and ages because of the complex geologic history of the area. The faulting, folding, and in some cases overturning of rock formations that has taken place during various periods of geologic activity, in combination with erosion, deposition, and subsequent cementation of rock materials that occurred during relatively quiet periods, have left a complex arrangement of geologic rock types and structures in the area. However, the extraordinary clarity of Lake Tahoe is related to the prevalence of resistant granitic bedrock in the Lake Tahoe Basin.

Rocks exposed in the Lake Tahoe Basin north of the project site are principally igneous, formed directly from the cooling of molten material. However, the Geologic Map of the Lake Tahoe Basin (Saucedo 2005) indicates that the project site, and much of Tahoe Vista area, is underlain by Holocene (10,000 years Before Present to Present Day) lake deposits consisting of thinly-bedded sandy silt and clay.

#### **TOPOGRAPHY**

The project site is located on the Kings Beach, California 7.5 minute U.S. Geological Survey (USGS) quadrangle map. The topography of the project site slopes gently from the northwest to the southeast corner and elevations range from approximately 6,360 to 6,230 feet above mean sea level (msl), respectively. Drainage follows the natural topography in a southeast direction.

## SEISMICITY

The potential for seismic activity is related to the proximity of faults, which are fractures or zones of closely associated fractures along which rocks on one side have been displaced with respect to those on the other side. Most faults are the result of repeated displacement that may have taken place suddenly and/or by slow creep.

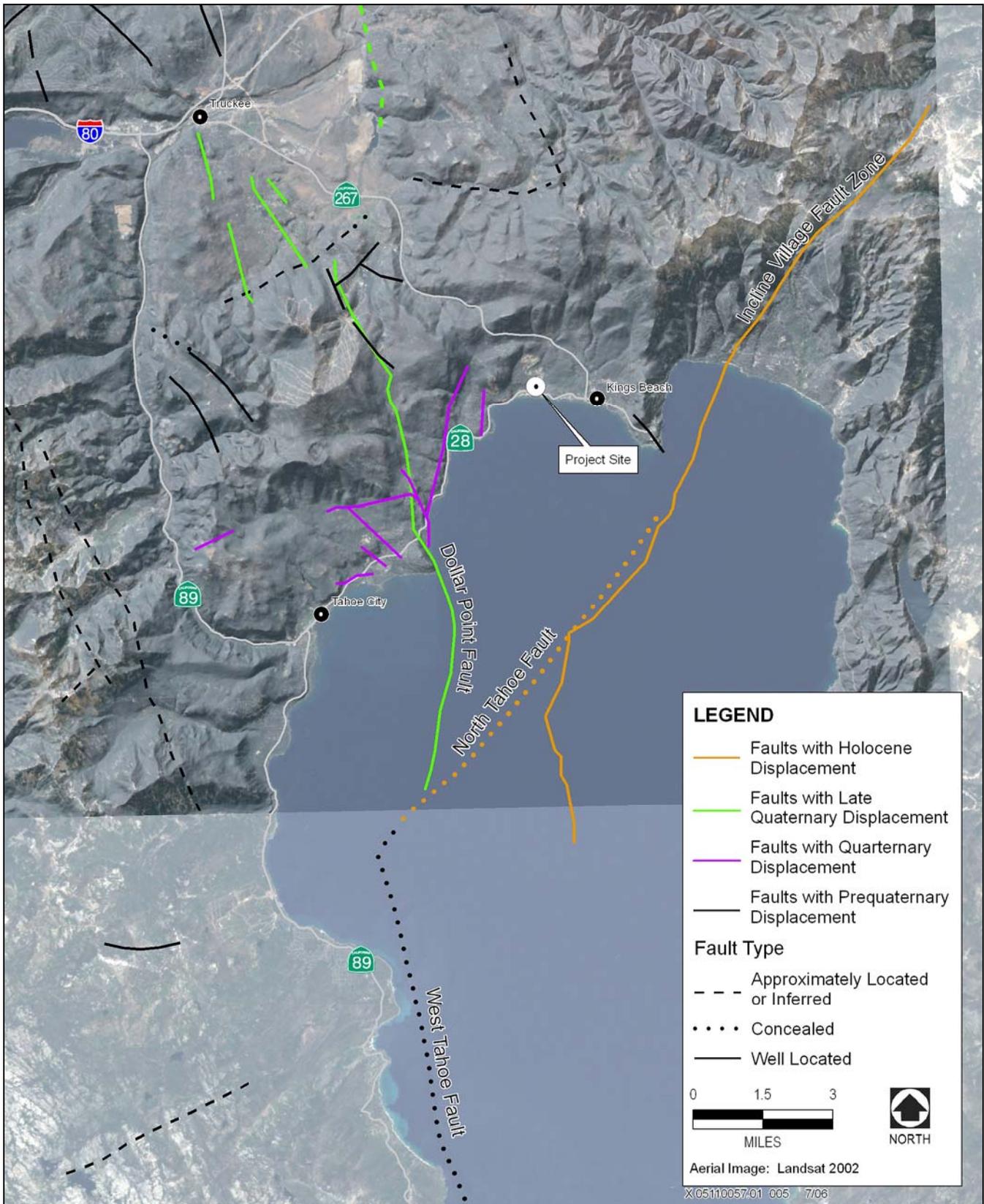
The project site is located approximately 500 feet north of the northernmost shore of Lake Tahoe on a regionally significant down-faulted block, or graben (i.e., trench-like geologic feature). The project site, as with other property in the area, is in the Uniform Building Code (UBC) Seismic Zone 3. The project site is not located near any active faults, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the California Department of Conservation, Division of Mines and Geology (Hart and Bryant 1999). However, the project site is located near several known earthquake faults (Sawyer and Haller 2000), described below.

The North Tahoe Fault, located beneath the lake, is a northeast-southwest-trending fault, approximately 7.0 miles long. It is estimated to be capable of generating an earthquake of magnitude 7.0; however, it has been inactive for at least 10,000 years (Jennings 1994). The northeast-southwest trending Incline Village fault zone appears to be the landward extension of the submerged North Tahoe fault and also trends northeast towards the Truckee Meadows fault (TMF). All three of these faults may be part of a system of normal (lateral motion) faults that rupture together. The north-south trending West Tahoe-Dollar Point fault zone is another prominent normal slip fault zone in the Tahoe Basin. The West Tahoe fault is submerged from Emerald Bay to McKinney Bay. The Dollar Point fault is the northern continuation of the West Tahoe fault northward from McKinney Bay. Both of these faults likely also rupture together (Ichinose, et al. 1999). Exhibit 9-1 shows the project site in relationship to known local faults and fault zones.

In addition to the fault map shown in Exhibit 9-1, the most recent fault map of the local area is the "Preliminary Map of Pleistocene to Holocene Faults in the Lake Tahoe Basin, California and Nevada," which is considered preliminary and is not intended for planning purposes. However, this map shows that locally, several faults have been mapped near the project site, some of which are shown to cut Pleistocene to Holocene (recent) deposits (Schweickert et al. 2000). The northern extension of the Agate Bay Fault is located approximately a half mile west of the project site, and an unnamed fault extends from the southeastern corner of the project site southeast to the shoreline of Lake Tahoe at Agate Bay. There is insufficient data to accurately determine the date of the last movement of the northern extension of the Agate Bay Fault. However, the unnamed fault that ends near the project site boundary is shown as a "scarp in modern valley alluvium."

California is seismically active, with many minor events occurring on a daily basis. While a number of seismic events of magnitude 6.0 or greater have taken place in the northern Lake Tahoe area between about 1800 and 1994, Placer County is not listed as one of the 36 counties in California affected by earthquake fault zones, as of May 1, 1999 (Hart and Bryant 1999).

According to the Earthquake Potential Map for Portions of Eastern California and Western Nevada (CGS 2005), the North Tahoe area is considered to have a relatively low potential for shaking caused by seismic-related activity. However, the Nevada Seismological Laboratory catalog lists eight earthquakes with Richter magnitudes of 4.2 or greater that have occurred since 1950 within approximately 18 miles of the center of North Lake Tahoe (Smith et al. 2004). These include a magnitude 4.8 earthquake approximately six miles north of the project site on June 26, 2005 and a magnitude 4.5 earthquake approximately 6.2 miles north of the project site on June 3, 2004. The 2004 event has been attributed to an increase in upper crustal seismicity following a deep dike swarm of 1,611 earthquakes in the Tahoe Vista area at the site of a deep magma injection event beneath Lake Tahoe (Smith et al. 2004).



Source: Ichinose et al. 1999; Seitz and Kent 2004; CA Division of Mines and Geology 2000

**Fault Map**

**Exhibit 9-1**

## 9.1.2 SOILS

Soils are a critical element in land-use planning and environmental analyses in the Lake Tahoe Region, because the TRPA Land Capability Districts (LCDs) are determined based on soil types. The U.S. Department of Agriculture, Natural Resources Conservation Service, (formerly the Soil Conservation Service) soil surveys shows two soil types on the project site: JwD and JhC. JwD is a very stony sandy loam that belongs to the Tahoma-Jorge Association and occurs on gently sloping to steep (2 to 30%) slopes, and generally occurs over latite and andesitic conglomerate (NRCS 1974). Soils in the Tahoma-Jorge association are formed from the weathering of volcanic rock. JhC refers to the Jabu stony sandy loam found on 2 to 9% slopes, well-drained, which formed from andesitic alluvial fans that were deposited over older lake sediments (NRCS 1974).

Tahoma soils are generally 43 to 60 inches deep. Elevations range from 6,200 to 8,000 feet above msl and the frost-free season in areas bearing this soil type is typically 30 to 50 days. Characteristic vegetation is primarily red and white fir, with an understory of mountain shrubs. Permeability is moderate and water capacity is 5 to 6.5 inches (NRCS 1974). Tahoma series soils often support land uses such as homesites and timber harvesting.

Jorge series soils are generally underlain by basic volcanic rocks, such as andesite, basalt, and latite, and often form on uplands. Slopes can range from 2 to 50%, and elevations range from 6,200 to 9,000 feet above msl. Like the Tahoma soils, the frost-free season is 30 to 50 days (NRCS 1974). Typical vegetation is conifer (e.g., fir and pine) with an understory of mountain shrubs. Permeability is moderate, the available rooting depth is 60 inches, and the available water capacity is 3 to 5 inches (NRCS 1974). Jorge soils typically support land uses such as homesites, timber, and watershed management.

Jabu series soils formed from alluvial fans underlain by older lake sediments. Slopes range from 0 to 9%, and elevations range from 6,200 to 6,800 feet. The frost-free season is 50 to 80 days. Vegetation generally consists of Jeffrey pine and white fir with an understory of manzanita, sagebrush, and other shrubs. Permeability is moderate, and the soils are well drained. Surface runoff is slow and the erosion hazard is slight. Jabu series soils are used mainly for homesites and timber (NRCS 1974).

### SUBSURFACE CONDITIONS

As part of the Geotechnical Investigation Report (Kleinfelder 2001), six test pits were excavated throughout the project site at depths of 5 to 13 feet below ground surface (bgs). At all test pit locations, subsurface conditions consisted of dark brown dense silty sands and sandy silts, and cobbles. Excavation of four of the six test pits was terminated because boulders were encountered. No groundwater was encountered up to the maximum depth of 13 feet bgs (Kleinfelder 2001). The exact locations of the borings and additional descriptive information on subsurface conditions at the project site are presented in the “Geotechnical Investigation Report,” included as Appendix D of this EA/EIR.

## 9.1.3 LAND CAPABILITY

The proposed project site is located in LCD 6, which has a base allowable coverage of 30% (TRPA Code of Ordinances 20.3.A). According to TRPA Code of Ordinances Chapter 20.3.B, the maximum land coverage allowed on a parcel to be used for tourist accommodation facilities (TAUs), multi-residential facilities of five units or more, public service facilities, and recreation facilities for projects within an approved community plan area is 50% of the project area.

If the project site were undeveloped, LCD 6 would establish the allowable coverage for the site. However, the project site is developed and currently occupied by the Sandy Beach Campground, a main 2-story building containing Spindleshanks Restaurant and other smaller ancillary buildings. The land coverage of the site was mapped and verified by TRPA at 174,324 square feet (sf) or roughly 64%. This developed land coverage,

recognized by TRPA, provides the basis for the future allowable coverage rather than the land capability districts. Therefore, the maximum allowable coverage for the proposed project is 174,324 sf.

### 9.1.4 MINERALS

In compliance with the California Surface Mining and Reclamation Act (SMARA), the California Department of Conservation, Division of Mines and Geology (CDMG) has established the classification system shown in Table 9-1 to denote both the location and significance of key extractive resources in Placer County.

<b>Table 9-1 CDMG Mineral Land Classification System – Placer County</b>	
Classification	Description
MRZ-1	Areas where available geologic information indicates there is little likelihood for the presence of significant mineral resources
MRZ-2a	Areas underlain by mineral deposits where geologic data indicate that significant measured or indicated resources are present...Land included in the MRZ-2a category is of prime importance because it contains known economic mineral deposits.
MRZ-2b	Areas underlain by mineral deposits where geologic data indicate that significant inferred resources are present...Further exploration work and/or changes in technology or economics could result in upgrading areas classified MRZ-2b to MRZ-2a.
MRZ-3a	Areas containing known mineral occurrences of undetermined mineral resource significance. Further exploration work within these areas could result in the reclassification of specific localities into MRZ-2a or MRZ-2b categories...
MRZ-3b	Areas containing inferred mineral occurrences of undetermined mineral resource significance. Land classified MRZ-3b represents areas in geologic settings that appear to be favorable environments for the occurrence of specific mineral deposits...
MRZ-4	Areas of no known mineral occurrences where geologic information does not rule out either the presence or absence of significant mineral resources.

Source: Lloyd 1995

The project site is zoned Mineral Resource Zone (MRZ)-4, an area of no known mineral occurrences where geologic information does not rule out either the presence or absence of significant mineral resources. The MRZ-4 classification does not imply that there is little likelihood for the presence of mineral resources, but rather there is a lack of knowledge regarding mineral occurrence. According to the geotechnical report (Kleinfelder 2001), the project site is underlain by silty sand with gravel. However, neither the sand nor the gravel occurs in large enough lenses of clean deposits to make either one an economically-viable source of construction aggregate.

## 9.2 REGULATORY SETTING

Regulations protecting the soil resources at the project site are enforced by TRPA, Lahontan RWQCB (through water quality regulations), and Placer County. Other regulations aid in the establishment of safe structures to ensure minimal, if any, impact on earth resources. The following discussion provides the framework for applicable earth resource requirements in the Lake Tahoe area of Placer County.

## 9.2.1 TAHOE REGIONAL PLANNING AGENCY LAND COVERAGE REGULATIONS

Soil conservation is essential for the maintenance of healthy plant communities, prevention of erosion, protection of water quality, maintenance of healthy stream systems, and protection of lake clarity. There are two major elements regarding soil conservation in the Lake Tahoe Basin: impervious land coverage and stream environment zones (SEZ). Impervious land coverage, such as asphalt, concrete, and roofs, prevent stormwater runoff from absorbing into the ground. When runoff bypasses this natural process, it is not filtered by the soil and does not contribute to local groundwater supplies. Excess runoff overloads stream channels, erodes stream banks and unnecessarily damages vegetation. Stream channel erosion transports nutrients and sediments to Lake Tahoe and contributes to the degradation of water clarity. SEZs are meadows, marshes, and wetlands that slow runoff by dispersing it over a large area, allowing sediment to settle out and vegetation to take up nutrients. Neither the project site, nor the project vicinity, is considered an SEZ.

### LAND CAPABILITY DISTRICTS

Since the late 1970s, regulatory agencies in the Lake Tahoe Basin, primarily TRPA, have used the land capability classification system known as the “Bailey System” (Land-Capability Classification of the Lake Tahoe Basin, California-Nevada: A Guide to Planning [Bailey 1974]) to evaluate applications that request either additional land coverage to existing developed lots or building permits for new development. The Bailey System was developed as an erosion control technique to mitigate the deleterious effects to stream systems and water quality that result from excessive land coverage. The Bailey System restricts the amount of impervious land coverage on all parcels and generally prohibits new land coverage in areas classified as SEZ.

Land capability is defined as “the level of use an area can tolerate without sustaining permanent (environmental) damage through erosion and other causes” (Bailey 1974). The Bailey system uses LCD ranging from 1 to 7, which assign a percentage of land coverage allowable in the designated LCD area (Table 9-2). Land coverage includes impervious surfaces such as constructed structures that prevent precipitation from directly reaching the surface of the land.

Capability Levels	Tolerance for Use	Slope Percent	Relative Erosion Control	Runoff Potential	Disturbance Hazards
7	Most	0–5	Slight	Low to moderately low	Low-hazard lands
6		0–16		Low to moderately low	
5		0–16	Moderately high to high		
4		9–30	Moderate	Low to moderately low	Moderate-hazard lands
3		9–30	Moderate	Moderately high to high	
2		30–50	High	Low to moderately low	
1a		Least	30+	High	Moderately high to high
1b	(Poor Natural Drainage)				
1c	(Fragile Flora and Fauna)				

Source: TRPA 2000

LCDs were derived by analyzing the land capability according to frequency and magnitude of hazards that may be encountered and by considering the type and intensity of uses suitable for each unit (TRPA 2000). The integration of the LCD unit and land use suitability resulted in limits on land-surface modifications for each unit that are expressed as a percentage of each area that can be used for impervious coverage.

Chapter 2 of the TRPA Code of Ordinances defines land coverage as a man-made structure, improvement or covering, that prevents normal precipitation from directly reaching the surface of the land underlying the structure, improvement, or covering. Examples include roofs, decks, patios, and surfaces paved with asphalt, concrete, or stone. Such structures are defined as “hard coverage.” Compacted areas without structures are defined as “soft coverage.” A structure, improvement, or covering shall not be considered as land coverage if it permits at least 75% of normal precipitation to directly reach the ground and permits growth of vegetation described on TRPA’s approved species list (TRPA 1991). TRPA Code of Ordinances Chapter 20 Land Coverage Standards applies the LCD to allowable land coverage. Table 9-3 presents the base percent coverage allowed for each land capability classification.

Land Capability District	Base Coverage Percent
6, 7	30
5	25
4	20
3	5
2	1
1a, 1b, 1c	1

Source: TRPA Code of Ordinances, Chapter 20, 1991

As explained in Section 9.1.3, if the project site were undeveloped, LCD 6 would establish the allowable coverage for the site. However, the project site is developed and land coverage of the site was mapped and verified by TRPA at 174,324 square feet (sf) or roughly 64%. This developed land coverage, recognized by TRPA, provides the basis for the future allowable coverage rather than the land capability districts. Therefore, the maximum allowable coverage for the proposed project is 174,324 sf.

## **9.2.2 FEDERAL EARTHQUAKE HAZARDS REDUCTION ACT**

The U.S. Congress passed the Earthquake Hazards Reduction Act in 1977 to “reduce the risks to life and property from future earthquakes in the United States” through the establishment and maintenance of an effective earthquake hazards and reduction program. To accomplish this, the Act established the National Earthquake Hazards Reduction Program (NEHRP). This program was significantly amended in November 1990 by the National Earthquake Hazards Reduction Program Act (NEHRPA) by refining the description of the agency responsibilities, program goals, and objectives. It was most recently reauthorized on October 25, 2004, by the National Earthquake Hazards Reduction Program Reauthorization Act of 2004.

NEHRP’s mission includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improved building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improved mitigation capacity; and accelerated application of research results. The NEHRPA designates the Federal Emergency Management Agency (FEMA) as the lead agency of the program and assigns it several planning, coordinating, and reporting responsibilities. Other NEHRPA agencies include the National Institute of Standards and Technology (NIST), the National Science Foundation (NSF), and the USGS.

## **9.2.3 CALIFORNIA BUILDING STANDARDS CODE**

The State of California provides minimum standards for building design through the California Building Standards Code (California Code of Regulations, Title 24). Where no other building codes apply, Chapter 29 of

this code regulates excavation, foundations, and retaining walls. The California Building Standards Code (CBC) also applies to building design and construction in the state and is based on the federal Uniform Building Code used widely throughout the country (generally adopted on a state-by-state or district-by-district basis). The CBC has been modified for California conditions with numerous more detailed and/or more stringent regulations, most of which apply to seismic concerns.

The State earthquake protection law (California Health and Safety Code 19100 et seq.) requires that structures be designed to resist stresses produced by lateral forces caused by wind and earthquakes. Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the CBC. The CBC identifies seismic factors that must be considered in structural design. Chapter 18 of the CBC regulates the excavation of foundations and retaining walls, and Appendix Chapter A33 regulates grading activities, including drainage and erosion control, and construction on unstable soils.

#### **9.2.4 ALQUIST-PRIOLO EARTHQUAKE FAULT ZONING ACT**

The Alquist-Priolo Earthquake Fault Zoning Act was passed by the California Legislature to mitigate the hazard of surface faulting to structures. The primary purpose of the act is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The act addresses only the hazard of surface fault rupture and does not include information regarding other seismic hazards. Local agencies must regulate most development in fault zones established by the State Geologist. Before a project can be permitted in a designated Alquist-Priolo Fault Study Zone, cities and counties must require a geologic investigation by a registered geologist to demonstrate that proposed buildings would not be constructed across active faults.

#### **9.2.5 CALIFORNIA SEISMIC HAZARDS MAPPING ACT**

The California Seismic Hazards Mapping Act of 1990 (California Public Resources Code Section 2690–2699.6) addresses seismic hazards other than surface rupture, such as liquefaction and induced landslides. The Seismic Hazards Mapping Act specifies that the lead agency for a project may withhold development permits until geologic or soils investigations are conducted for specific sites and mitigation measures are incorporated into plans to reduce hazards associated with seismicity and unstable soils.

#### **9.2.6 LAHONTAN RWQCB— NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM**

In California, the State Water Resources Control Board manages the promulgated regulations of the Environmental Protection Agency (EPA) (55 CFR 47990) requiring the permitting of stormwater-generated pollution under the National Pollutant Discharge Elimination System (NPDES). In turn, the Board’s jurisdiction is managed through Regional Water Quality Control Boards (RWQCBs). Pursuant to these federal regulations, an operator must obtain a General Permit under the NPDES Stormwater Program for all construction activities that cause ground disturbance of one acre or greater. The General Permit requires the implementation of best management practices (BMPs) to reduce pollutant loads into the waters of the State and measures to reduce sediment and erosion control. In addition, a Storm Water Pollution Prevention Plan (SWPPP) must be prepared. The SWPPP addresses water pollution control during construction. SWPPPs require that all stormwater discharges associated with construction activity where clearing, grading, and excavating result in soil disturbances, must by law, be free of site pollutants. Project compliance with Lahontan RWQCB NPDES requirements is addressed in Chapter 8, “Hydrology and Water Quality.”

## **9.2.7 PLACER COUNTY GENERAL PLAN**

While the Placer County General Plan (1994) contains a number of policies related to seismic and geologic hazards, none are applicable to the proposed project.

## **9.2.8 PLACER COUNTY BUILDING AND DEVELOPMENT ORDINANCES**

Placer County Code Article 15.48, “Grading, Erosion and Sediment Control,” contains numerous ordinances enacted for the purpose of regulating grading on property in the unincorporated area of Placer County to safeguard life, limb, health, property, and public welfare; to avoid pollution of watercourses with hazardous materials, nutrients, sediments, or other earthen materials generated on or caused by surface runoff; and to ensure that the intended use of a graded site is consistent with the Placer County General Plan, any applicable specific plans, and applicable Placer County ordinances, including the zoning ordinance, flood damage prevention ordinance (Article 15.52), environmental review ordinance (Chapter 18, Placer County Code), and applicable chapters of the California Building Code.

## **9.3 ENVIRONMENTAL CONSEQUENCES AND RECOMMENDED MITIGATION MEASURES**

### **9.3.1 CRITERIA OF SIGNIFICANCE**

#### **CEQA CRITERIA**

The proposed project would result in a significant impact to geology, soils, or mineral resources if it would:

- ▶ expose people or structures to potential substantial adverse effects involving rupture of a known earthquake fault, strong seismic shaking, seismic-related ground failure, including liquefaction, or landslides;
- ▶ result in substantial soil erosion or loss of topsoil;
- ▶ be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse;
- ▶ be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property; or
- ▶ result in the loss of availability of a regionally- or locally-important mineral resource recovery site.

Significance criteria used in the analysis of land coverage relate directly to the TRPA Land Classification system and coverage requirements. Seismic hazards may include earthquake, liquefaction, subsidence, tsunami, and seiche potential. Non-seismic geologic hazards are discussed with regard to potential impacts on the alteration of the land surface (naturally or through human actions), including grading, deposition or erosion, landslides, avalanche, or any effects that are because of or that may alter soil properties or geotechnical issues.

Project implementation would have no impact in the following issue areas, and they are not discussed further in this EA/EIR for the following reasons:

- ▶ the project would be constructed in soil types composed of silty sands and sandy silts, which have an extremely low shrink/swell potential; therefore, there would be no impact related to hazards associated with construction on expansive soils.

- ▶ the project’s wastewater would be conveyed and treated by an authorized off-site municipal service provider; therefore, the use of septic tanks or alternative wastewater disposal systems would not be necessary, and there would be no impact related to septic tanks or alternative wastewater disposal systems.
- ▶ the project site is underlain by silty sand and gravel that does not represent a source of regionally- or locally-important mineral resource recovery sites; therefore, there would be no impact to mineral resources.

**TRPA CRITERIA**

The TRPA Land Classification System (Tables 9-2 and 9-3) is used to assess potential impacts to sensitive slope, soils, and drainage conditions.

Based on TRPA’s Initial Environmental Checklist, the proposed project would result in a significant impact to geology and soils if it would:

- ▶ compact or cover soil with impervious surfaces beyond the limits allowed in the land capability districts;
- ▶ result in a change in the topographic features of the site inconsistent with the natural surrounding conditions;
- ▶ result in unstable soil conditions;
- ▶ change the undisturbed soil or native geologic substructures or grading in excess of five feet;
- ▶ continue or increase wind or water erosion of soils; or
- ▶ expose people or property to geologic hazards.

**9.3.2 IMPACT ANALYSIS**

**ALTERNATIVE A—PROPOSED PROJECT**

**IMPACT 9.A-1**      *Land Coverage. Alternative A would result in a total of approximately 3.88 acres or 169,061 sf of impervious surfaces on the project site, or 62% coverage, in LDC 6. This would result in a reduction of 5,263 sf (0.12 acre) in comparison to the TRPA-verified coverage for the site (174,324 sf). This land coverage reduction would be banked by TRPA.*

**Significance**      *Less Than Significant*

**Mitigation**      *No Mitigation is Required*

**Significance after Mitigation**      *Less Than Significant*

The project site is designated as LCD 6, which has a base allowable coverage of 30%. However, because the project site is already developed, the TRPA verified site coverage provides the basis of the allowable coverage. The existing TRPA-verified site coverage includes 174,324 sf (4.00 acres) of asphalt paving, buildings, decks and patios, gravel, compacted dirt, and concrete pads, all of which are located in LCD 6. TRPA Code of Ordinances 20.3.B(3) allows multi-residential facilities of five or more units a maximum land coverage of up to 50%, provided the parcel is located in a community plan approved by TRPA. The project site is located within the approved Tahoe Vista Community Plan area, and contains an affordable/employee housing component.

Alternative A would reduce the amount of coverage on the project site to approximately 169,061 sf (3.88 acres), which is approximately 87,710 sf (2.01 acres) over the base-allowable 30% coverage, but approximately 5,263 sf (0.12 acre) below the existing TRPA verified site coverage (174,324 sf).

TRPA Code of Ordinances Section 20.5.C provides that land coverage on a developed site may be relocated to other parts of the same site that have no coverage. Alternative A would result in the relocation of 33,768 sf of existing coverage. Areas where coverage has been relocated would be rehabilitated to stabilize and revegetate (including mulching) soils in all barren areas in accordance with TRPA Code of Ordinances Section 20.5.C(2) and consistent with Code Chapter 77, Revegetation.

Because the total proposed coverage associated with Alternative A, approximately 169,061 sf (3.88 acres), would be less than the TRPA-verified coverage for the site, 174,324 sf (4.00 acres), this impact would be **less than significant**.

Although this impact is less than significant, the applicant would be required to either remove coverage in excess of the LCD base allowable coverage or submit an excess coverage mitigation fee. The project applicant would submit an excess coverage mitigation fee to retain the portion of coverage that exceeds the base allowable coverage in LCD 6, as determined by TRPA Code Section 20.5.A(3). The excess coverage mitigation fee shall be calculated by determining the amount of excess coverage, approximately 87,710 sf (2.01 acres) for the entire project site under Alternative A, in accordance with subparagraph 20.5.A(3)(a) of the TRPA Code of Ordinances. The excess coverage square footage is then multiplied by the appropriate Mitigation Fee Coverage Cost Factor to determine the excess coverage mitigation fee. The Mitigation Fee Coverage Cost Factor is established by TRPA staff before January 1 of each year, based on a certified real estate appraiser's estimate of the land bank's cost to acquire land coverage under the TRPA Excess Land Coverage Mitigation Fee program. Before project implementation, the proposed mitigation for excess land coverage shall be formalized through a written agreement between TRPA and the project applicant.

**IMPACT**                      **Seismic Hazards.** *The project site is not located in an Alquist-Priolo Earthquake Fault Zone; however, several faults are located in the North Lake Tahoe Area that could subject the project site to ground shaking. Because the project would be designed and constructed in accordance with the current design requirements of UBC Seismic Zone 3, there would be no substantial increased risk of injury or property damage from strong ground shaking or earthquake-induced liquefaction or landslides caused by unstable soils.*

**9.A-2**

**Significance**      *Less Than Significant*

**Mitigation**      *No Mitigation is Required*

**Significance after Mitigation**      *Less Than Significant*

The project site is not located in an Alquist-Priolo Earthquake Fault Zone; therefore, the potential for exposure to fault-related ground rupture on the project site is low (Hart and Bryant 1999). However, the project site is located within five miles of several active fault zones to the west, southwest, and southeast (Jennings 1994, CDMG 2000). In addition, the most current interpretations and mapping of potentially active faults near the project site indicate local faults that cut Pleistocene or Holocene (recent) deposits (Schweickert et al. 2000; Seitz and Kent 2004). The northern extension of the Agate Bay Fault is located approximately one half mile to the west of the project site, and an unnamed fault extends from the southeastern corner of the project site southeast to the shoreline at Agate Bay.

According to the Earthquake Shaking Potential Map for Portions of Eastern California and Western Nevada (CGS 2005), the North Tahoe area is considered to have a relatively low potential for shaking from seismic-related activity. The project components would be designed and constructed in accordance with the current design requirements for UBC Seismic Zone 3. Therefore, there would be no substantial increased risk of injury or property damage from strong ground shaking. Should additional information become available indicating an

increased risk of seismic activity near the project site, a seismic risk analysis by a professional geologist should be performed prior to construction.

Other potential seismic hazards include tsunami or seiche. A tsunami is a series of waves that may result from a major seismic event that involves the displacement of a large volume of water and can occur in any large body of water. A seiche is a periodic oscillation of an enclosed or restricted water body, typically a lake or reservoir, produced by seismic shaking. A seiche results in a potentially damaging wave, similar to a tsunami, which may result from seismic activity near a large lake. A seiche may occur in (wave) periods that differ from a tsunami. But should the period of wave propagation occur simultaneously with a tsunami, it could result in cumulative seismic-related wave effects. Ichinose et al. (1999) show through simulations that model wave propagation for various earthquake scenarios that if a large earthquake were to occur (~ magnitude 7.0), there exists the potential for both tsunami and seiche-related waves to affect (in particular) the north shore of Lake Tahoe. Hypothetical scenarios show that waves up to approximately 30 feet could hit the communities of Kings Beach and Tahoe Vista with potentially devastating effects.

Although wave run-up heights using nonlinear equations, bottom friction, and topography have not been determined at this time, and therefore maps do not exist that indicate a minimum level of high ground or safety, the average surface elevation of Lake Tahoe is 6,225 ft above msl (USGS 2005), and the lowest elevation on the project site is approximately 6,230 ft above msl. Because the probability of an earthquake strong enough to cause a seiche in Lake Tahoe is relatively low, only 3-4% in 50 years (Brown 2000), effects from a tsunami or seiche are not considered likely to occur.

Although the potential for seismic hazards exists in the North Tahoe area and throughout California in general, the earthquake shaking potential in the project area is not considered high (CGS 2005), and current building codes substantially reduce the costs of damage and potential for building collapse. Therefore, impacts related to seismic hazards at the project site for Alternative A are considered **less than significant**.

**IMPACT**  
**9.A-3**                      **Non-Seismic Geologic Hazards.** *The project would be constructed on a relatively level site, where no known non-seismic geologic hazards, such as landslides, mudslides, sinkholes, or lava flows, have occurred in the past. The soils/hydrologic subsurface investigation found no severe soil constraints that would preclude construction and determined that the maximum depth of excavation of approximately 12 to 13 feet bgs should not encounter groundwater. However, variable subsurface conditions may be present during construction, resulting in the potential to encounter soil constraints or intercept groundwater. Furthermore, site grading activities have the potential to result in soil erosion.*

**Significance**            *Potentially Significant*

**Mitigation**            *Mitigation Measure 9.A-3a. Submit Final Geotechnical Engineering Report and Improvement Plans.*

*Mitigation Measure 9.A-3b. Include a Dewatering Plan in the Storm Water Pollution and Prevention Plan (SWPPP) Developed and Implemented Pursuant to Mitigation Measure 8.A-1a.*

*Mitigation Measure 9.A-3c. Obtain Grading Permit from the Placer County Engineering and Surveying Department (ESD), Secure a Source for the Transportation and Deposition of Excavated Materials (if deemed necessary in the Final Grading Plan), and Ensure that All Earthwork is Monitored by a Geotechnical Engineer.*

**Significance after Mitigation**    *Less Than Significant*

Project implementation would require regrading much of the site, which would result in disturbance to approximately 95% of the site. Grading activities would include cut and fill, trenching, excavation for roadways and building foundations, pipe installation, and revegetation. The proposed project would be constructed with slab on grade (or pad graded) foundations. This type of construction requires additional grading when placed on naturally sloped terrain because the grade around the perimeter of each building must be raised or lowered to create a flat pad. Approximately 1,700 cubic yards (CY) of cut and approximately 3,100 CY of fill would be required for Alternative A. This is a rough estimate based on the preliminary grading plan and does not take into consideration several factors, such as the potential use of the net cut as fill that would be needed for roadwork on site, such as asphalt paving or aggregate base. Assuming the material cut from the site was deemed appropriate by the soils engineer, it would be reused on-site as part of the required fill material. Given this uncertainty, it is possible that some amount of soil would need to be exported from the site.

The maximum building excavation depths would be approximately six feet; however, the swimming pool and basement may require excavation of up to 12 or 13 feet bgs. As part of the Geotechnical Investigation Report (Kleinfelder 2001), six test pits were excavated throughout the project site at depths of 5 to 13 feet below ground surface (bgs), and no groundwater was encountered up to the maximum depth of 13 feet bgs (Kleinfelder 2001). (The exact locations of the borings and additional descriptive information on subsurface conditions at the project site are presented in the “Geotechnical Investigation Report,” included as Appendix D of this EA/EIR.) As discussed in detail in Chapter 8, “Hydrology and Water Quality,” TRPA Ordinances prohibit excavation deeper than five feet because of the potential for groundwater interception or interference, except under certain defined and permitted conditions (see Chapter 8 for the list of conditions that allow exceptions). However, based on information provided in the Geotechnical Investigation Report, TRPA issued Permit #20021821, dated August 7, 2003, which allows for excavation at depths of up to 15 feet bgs. Nonetheless, variable subsurface conditions may be present, and excavation activities could still encounter seasonal groundwater, which could result in potentially significant water quality impacts during construction.

Construction activities would result in the temporary disturbance of soil and would expose disturbed areas to winter storm events. Rain of sufficient intensity could dislodge soil particles from the soil surface. Once particles are dislodged and the storm is large enough to generate runoff, localized erosion could occur. In addition, soil disturbance during the summer months could result in loss of topsoil because of wind erosion. Therefore, potentially significant soil erosion could result from construction activities associated with the project.

As noted in the Environmental Impact Assessment Questionnaire (included in Appendix A), no known geologic hazards have been observed on the site, and the Geotechnical Investigation Report (Kleinfelder 2001), included as part of Appendix D, found no severe soil constraints that would preclude grading and construction activities. A final detailed geotechnical report and detailed improvement plans have not yet been prepared. The Final Geotechnical Investigation Report and Improvement Plans prepared for Alternative A would address very specific requirements that consider the full range of non-seismic geologic hazards related to soil properties.

Therefore, for the reasons described above, Alternative A would have **potentially significant** impacts related to non-seismic geologic hazards (soil erosion and water quality).

## ALTERNATIVE B—REDUCED DEVELOPMENT

**IMPACT 9.B-1**      **Land Coverage.** *Alternative B would result in a total of approximately 3.75 acres or 163,459 sf of impervious surfaces on the project site, or 60% coverage, in LDC 6. This would result in a reduction of 10,865 sf (0.25 acre) in comparison to the TRPA-verified coverage for the site (174,324 sf). This land coverage reduction would be banked by TRPA.*

**Significance**      *Less Than Significant*

**Mitigation**      *No Mitigation is Required*

**Significance after Mitigation**      *Less Than Significant*

The TRPA verified site coverage provides the basis of the allowed coverage for this project site. The existing TRPA-verified site coverage includes 174,324 sf (4.00 acres) of asphalt paving, buildings, decks and patios, gravel, compacted dirt, and concrete pads, all of which are located in LCD 6.

Alternative B would reduce the amount of coverage on the project site to 163,459 sf (3.75 acres). This coverage is approximately 82,108 (1.88 acres) over the base-allowable 30% coverage that would apply to an undeveloped site, but approximately 10,865 sf (0.25 acre) below the existing TRPA-verified site coverage.

As described above, TRPA Code of Ordinances Section 20.5.C allows relocation of coverage on the same site. Alternative B would result in the relocation of 32,585 sf of existing coverage. Areas where coverage has been relocated would be rehabilitated to stabilize and revegetate (including mulching) soils in all barren areas in accordance with TRPA Code of Ordinances Section 20.5.C(2) and consistent with Code Chapter 77, Revegetation.

Because the total proposed coverage associated with Alternative B, approximately 163,459 sf (3.75 acres), would be less than the TRPA-verified coverage for the site, 174,324 sf (4.00 acres), this impact would be **less than significant**. As described above in Impact 9.A-1, however, the applicant is required to either remove coverage in excess of the LCD 6 base allowable coverage or submit an excess coverage mitigation fee.

**IMPACT 9.B-2**      **Seismic Hazards.** *Because Alternative B would be located on the same site as Alternative A, this impact is the same as Impact 9.A-2 described above for Alternative A. Alternative B would not be located in an Alquist-Priolo Earthquake Fault Zone; however, several faults are located in the north Lake Tahoe area that could subject the site to ground shaking. Because the Alternative B project components would be designed and constructed in accordance with the current design requirements of UBC Seismic Zone 3, there would be no substantial increased risk of injury or property damage from strong ground shaking or earthquake-induced liquefaction or landslides caused by unstable soils.*

**Significance**      *Less Than Significant*

**Mitigation**      *No Mitigation is Required*

**Significance after Mitigation**      *Less Than Significant*

**IMPACT  
9.B-3**

**Non-Seismic Geologic Hazards.** *Because Alternative B would be located on the same site as Alternative A, this impact would be similar to Impact 9.A-3 described above for Alternative A. Alternative B would be constructed on a relatively level project site, where no known non-seismic geologic hazards, such as landslides, mudslides, sinkholes, or lava flows, have occurred in the past. The soils/hydrologic subsurface investigation found no severe soil constraints that would preclude construction and determined that proposed excavation to a maximum depth of approximately 12 to 13 feet bgs should not encounter groundwater. However, variable subsurface conditions may be present during construction, resulting in the potential to encounter soil constraints or intercept groundwater. Furthermore, site grading activities have the potential to result in soil erosion.*

**Significance** *Potentially Significant*

**Mitigation** *Mitigation Measure 9.B-3a. Submit Final Geotechnical Engineering Report and Improvement Plans.*

*Mitigation Measure 9.B-3b. Include a Dewatering Plan in the Storm Water Pollution and Prevention Plan (SWPPP) Developed and Implemented Pursuant to Mitigation Measure 8.B-1a.*

*Mitigation Measure 9.B-3c. Obtain Grading Permit from the Placer County ESD, Secure a Source for the Transportation and Deposition of Excavated Materials (if deemed necessary in the Final Grading Plan), and Ensure that All Earthwork is Monitored by a Geotechnical Engineer.*

**Significance after  
Mitigation** *Less Than Significant*

As with Alternative A, Alternative B would require regrading much of the site, which would result in disturbance to approximately 95% of the site. However, approximately 1,100 CY of cut and approximately 2,250 CY of fill would be required for Alternative B. This is a rough estimate based on the preliminary grading plan and does not take into consideration several factors, such as the potential use of the net cut as fill that would be needed for roadwork on site, such as asphalt paving or aggregate base. Assuming the material cut from the site was deemed appropriate by the soils engineer, it would be reused on-site as part of the required fill material. Given this uncertainty, it is possible that some amount of soil would need to be exported from the site.

Stepped footings would be used in Alternative B rather than slab on grad foundations. Stepped footings typically allow a building to more closely follow the existing terrain, thereby minimizing the amount of grading necessary to construct the foundation. The stepped footing allows the existing grade around the perimeter of the building to remain the same as existing, and the drainage flows around the building and follows its existing path. Usually, cut and/or fill slopes and/or retaining walls around the building are not necessary with stepped footings.

As discussed above for Alternative A under Impact 9.A-3, the soils/hydrologic subsurface investigation found no severe soil constraints that would preclude construction and determined that proposed excavation to a maximum depth of approximately 12 to 13 feet bgs should not encounter groundwater. However, variable subsurface conditions may be present during construction, resulting in the potential to encounter soil constraints or intercept groundwater. Furthermore, site grading activities have the potential to result in soil erosion. Therefore, Alternative B would have **potentially significant** impacts related to non-seismic geologic hazards (soil erosion and water quality).

## ALTERNATIVE C – REDUCED DEVELOPMENT WITH RECREATION ELEMENTS

**IMPACT 9.C-1**      *Land Coverage. Alternative C would result in a total of approximately 3.75 acres or 163,459 sf of impervious surfaces on the project site, or 61% coverage, in LDC 6. This would result in a reduction of 10,865 sf (0.25 acre) in comparison to the TRPA-verified coverage for the site (174,324 sf). This land coverage reduction would be banked by TRPA.*

**Significance**      *Less Than Significant*

**Mitigation**      *No Mitigation is Required*

**Significance after Mitigation**      *Less Than Significant*

The TRPA verified site coverage provides the basis of the allowed coverage for the project site. The existing TRPA-verified site coverage includes 174,324 sf (4.00 acres) of asphalt paving, buildings, decks and patios, gravel, compacted dirt, and concrete pads, all of which are located in LCD 6.

Alternative C would reduce the amount of coverage to 163,459 sf (3.75 acres). This coverage is approximately 82,900 (1.90 acres) over the base-allowable 30% coverage that would apply to an undeveloped site, but approximately 10,865 sf (0.25 acre) below the existing TRPA verified site coverage.

TRPA Code of Ordinances Section 20.5.C provides that land coverage on a developed site may be relocated to other parts of the same site that currently have no coverage. Alternative C would result in the relocation of 34,229 sf of existing coverage. Areas where coverage has been relocated would be rehabilitated to stabilize and revegetate (including mulching) soils in all barren areas in accordance with TRPA Code of Ordinances Section 20.5.C(2) and consistent with Code Chapter 77, Revegetation.

Because the total proposed coverage associated with Alternative C, approximately 163,459 sf (3.75 acres), would be less than the TRPA-verified coverage for the site, 174,324 sf (4.00 acres), this impact would be **less than significant**. As discussed in Impact 9.A-1, the applicant is required to either remove coverage in excess of the LCD base allowable coverage or submit an excess coverage mitigation fee.

**IMPACT 9.C-2**      *Seismic Hazards. Because Alternative C would be located on the same site as Alternative A, this impact is the same as Impact 9.A-2 described above for Alternative A. Alternative C would not be located in an Alquist-Priolo Earthquake Fault Zone; however, several faults are located in the north Lake Tahoe area that could subject the site to ground shaking. Because the Alternative C project components would be designed and constructed in accordance with the current design requirements of UBC Seismic Zone 3, there would be no substantial increased risk of injury or property damage from strong ground shaking or earthquake-induced liquefaction or landslides caused by unstable soils.*

**Significance**      *Less Than Significant*

**Mitigation**      *No Mitigation is Required*

**Significance after Mitigation**      *Less Than Significant*

**IMPACT 9.C-3**      **Non-Seismic Geologic Hazards.** *Because Alternative C would be located on the same site as Alternative A, this impact is similar to Impact 9.A-3 described above for Alternative A. Alternative C would be constructed on a relatively level project site, where no known non-seismic geologic hazards, such as landslides, mudslides, sinkholes, or lava flows, have occurred in the past. The soils/hydrologic subsurface investigation found no severe soil constraints that would preclude construction and determined that proposed excavation to a maximum depth of approximately 12 to 13 feet bgs should not encounter groundwater. However, variable subsurface conditions may be present during construction, resulting in the potential to encounter soil constraints or intercept groundwater. Furthermore, site grading activities have the potential to result in soil erosion.*

**Significance**      *Potentially Significant*

**Mitigation**      *Mitigation Measure 9.C-3a. Submit Final Geotechnical Engineering Report and Improvement Plans.*

*Mitigation Measure 9.C-3b. Include a Dewatering Plan in the Storm Water Pollution and Prevention Plan (SWPPP) Developed and Implemented Pursuant to Mitigation Measure 8.C-1a.*

*Mitigation Measure 9.C-3c. Obtain Grading Permit from the Placer County ESD, Secure a Source for the Transportation and Deposition of Excavated Materials (if deemed necessary in the Final Grading Plan), and Ensure that All Earthwork is Monitored by a Geotechnical Engineer.*

**Significance after Mitigation**      *Less Than Significant*

As with Alternatives A and B, Alternative C would require regrading much of the site, which would result in disturbance to approximately 95% of the site. Approximately 1,100 CY of cut and approximately 2,150 CY of fill would be required for Alternative C. This is a rough estimate based on the preliminary grading plan and does not take into consideration several factors, such as the potential use of the net cut as fill that would be needed for roadwork on site, such as asphalt paving or aggregate base. Assuming the material cut from the site was deemed appropriate by the soils engineer, it would be reused on-site as part of the required fill material. Given this uncertainty, it is possible that some amount of soil would need to be exported from the site.

As with Alternative B, Alternative C would use stepped footings rather than slab on grad foundations, which allow a building to more closely follow the existing terrain, therefore minimizing the amount of grading necessary to construct the foundation.

As discussed above for Alternative A under Impact 9.A-3, the soils/hydrologic subsurface investigation found no severe soil constraints that would preclude construction and determined that proposed excavation to a maximum depth of approximately 12 to 13 feet bgs should not encounter groundwater. However, variable subsurface conditions may be present during construction, resulting in the potential to encounter soil constraints or intercept groundwater. Furthermore, site grading activities have the potential to result in soil erosion. Therefore, Alternative C would have **potentially significant** impacts related to non-seismic geologic hazards (soil erosion and water quality).

## **ALTERNATIVES COVERAGE SUMMARY**

Table 9-4, below, compares the land coverage impacts and the required land coverage transfer for the three development alternatives evaluated in this EA/EIR.

Table 9-4 Summary of Land Coverage Impacts for all Alternatives							
Alternatives	Acres of Coverage Proposed	Allowable Acres of Coverage <sup>1</sup>	Proposed % Site Coverage	Allowable % Site Coverage <sup>1</sup>	Acres of Coverage in Excess of Bailey LCDs	LCD Coverage Mitigation	Impact to Land Coverage
A	3.88	4.00	62%	64%	2.01	Excess coverage mitigation fee	Less than Significant
B	3.75	4.00	60%	64%	1.88	Excess coverage mitigation fee	Less than Significant
C	3.75	4.00	61%	64%	1.90	Excess coverage mitigation fee	Less than Significant

<sup>1</sup> Because the project site is developed, the total allowable acres of coverage for the project site is based on the TRPA-verified land coverage of 174,324 sf (4.00 acres), or 64%.

### ALTERNATIVE D—NO PROJECT

Under Alternative D, the proposed project would not be implemented. The site would remain in its current state, and would continue to be operated as a campground and RV park with a main commercial building (including Spindleshanks Restaurant) and other ancillary uses. No project-related clearing, grading, or other construction activities would occur on-site. Although no non-seismic geologic hazards are known in the project area, the project site is located near several faults. The risk of damage or injury due to seismic shaking or liquefaction would be the same under Alternative D as with existing conditions. The applicant has indicated that due to financial considerations, the project site (Sandy Beach Campground) could be closed at the end of the 2007 season. Assuming the campground were closed, there would be no impacts related to land coverage, geology, or soils under Alternative D.

### 9.3.3 MITIGATION MEASURES

#### ALTERNATIVE A—PROPOSED PROJECT

Mitigation Measure 9.A-3a. Submit Final Geotechnical Engineering Report and Improvement Plans.

The project applicant shall implement the following:

- ▶ Submit to Placer County Engineering and Surveying Department (ESD) for review and approval, a geotechnical engineering report produced by a California Registered Civil Engineer or Geotechnical Engineer. The report shall address and make recommendations on the following: (1) road, pavement, and parking area design; (2) structural foundations, including retaining wall design (if applicable); (3) grading practices; (4) erosion/winterization; (5) special problems discovered on-site (i.e., groundwater, expansive/unstable soils, evidence of previous mining activity); and (6) slope stability. Once approved by Placer County ESD, two copies of the final report shall be provided to Placer County ESD and one copy to the Building Department for their use. If the soils report indicates the presence of critically expansive or other soils problems which, if not corrected, could lead to structural defects, a certification of completion of the requirements of the soils report may be required before issuance of building permits. It is the responsibility of the developer to provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the report.

- ▶ The applicant shall prepare and submit Improvement Plans, specifications, and cost estimates (per the requirements of Section II of the Land Development Manual that are in effect at the time of submittal) to Placer County ESD for review and approval of each project construction phase. The plans shall show all conditions for the project, as well as pertinent topographical features both on- and off-site. All existing and proposed utilities and easements, on-site and adjacent to the project, which may be affected by planned construction shall be shown on the plans. All landscaping and irrigation facilities in the public right-of-way or public easement, or landscaping within sight distance areas at intersections, shall be included in the Improvement Plans. The applicant shall pay plan check and inspection fees and before plan approval, all applicable recording and production costs shall be paid. The cost of the above-noted landscape and irrigation facilities shall be included in the estimates used to determine these fees. It is the applicant's responsibility to obtain all required agency signatures on the plans and to secure department approvals. If the Design/Site Review and/or Design Review Committee (DRC) review is required as a condition of approval for the project, said review process shall be completed before submittal of Improvement Plans. Record drawings shall be prepared and signed by a California Registered Civil Engineer at the applicant's expense and shall be submitted to Placer County ESD in both hard copy and electronic version to be approved by Placer County ESD prior to acceptance by the County of site improvements.
  
- ▶ All proposed grading, drainage, and utility improvements, and vegetation and tree removal shall be shown on the improvement plans, and all work shall conform to provisions of the County Grading Ordinance that are in effect at the time of the submittal. No grading, clearing, or tree disturbance shall take place until the improvement plans are approved and all temporary construction fencing has been installed and inspected by a member of the Design Review Committee. All cut/fill slopes shall be at 2:1 (horizontal:vertical) unless a soils report supports a steeper slope and Placer County ESD concurs with said recommendation. The applicant shall revegetate all disturbed areas. Revegetation undertaken from April 1 to October 1 shall include regular watering to ensure adequate growth. A winterization plan shall be provided with project improvement plans. It is the applicant's responsibility to ensure proper installation and maintenance of erosion control winterization during project construction. Where soil stockpiling or borrow areas are to remain for more than one construction season, proper erosion control measures shall be applied as specified in the improvement plans/grading plans. Plans shall provide for erosion control to the satisfaction of the Placer County ESD where roadside drainage is off the pavement. The applicant shall also submit to Placer County ESD a letter of credit or cash deposit in the amount of 110% of an approved engineer's estimate for winterization and permanent erosion control work before improvement plan approval to guarantee protection against erosion and improper grading practices. On the County's acceptance of improvements and satisfactory completion of a one-year maintenance period, unused portions of said deposit shall be refunded to the project applicant or authorized agent.

If at any time during construction a field review by County personnel indicates a significant deviation from the proposed grading shown on the improvement plans, specifically with regard to slope heights, slope ratios, erosion control, winterization, tree disturbance, and/or pad elevations and configurations, the plans shall be reviewed by the Design Review Committee/Placer County ESD for a determination of substantial conformance to the project approvals before any further work proceeds. Failure of the Design Review Committee/Placer County ESD to make a determination of substantial conformance may serve as grounds for revocation/modification of the project approval by the appropriate hearing body.

- ▶ The applicant shall provide Placer County ESD with a letter from the appropriate fire protection district describing conditions under which the service will be provided to the project. Said letter shall be provided before the approval of Improvement Plans, and a fire district representative's signature shall be provided on the plans.

**Mitigation Measure 9.A-3b. Include a Dewatering Plan in the Storm Water Pollution and Prevention Plan (SWPPP) Developed and Implemented Pursuant to Mitigation Measure 8.A-1a.**

The SWPPP developed and implemented as part of Mitigation Measure 8.A-1a (see Chapter 8, “Hydrology and Water Quality”) must specifically include a dewatering plan that details procedures for safely and appropriately dealing with seasonal groundwater encountered during excavation.

**Mitigation Measure 9.A-3c. Obtain Grading Permit from the Placer County ESD, Secure a Source for the Transportation and Deposition of Excavated Materials (if deemed necessary in the Final Grading Plan), and Ensure that All Earthwork is Monitored by a Geotechnical Engineer.**

The project applicant shall ensure the following prior the commencement of any earthwork:

- ▶ Obtain a Grading Permit from the Placer County ESD before export or import of any soil or other material to or from an off-site location.
- ▶ The construction and excavation contractor secures a source of transportation and a location for deposition and/or storage of all excavated materials removed from the project site.
- ▶ All earthwork shall be monitored by a geotechnical engineer tasked with the responsibility of providing oversight during all excavation activities, placement of fill, and disposal of materials removed from and deposited on the project site.

#### **ALTERNATIVE B—REDUCED DEVELOPMENT**

**Mitigation Measure 9.B-3a. Submit Final Geotechnical Engineering Report and Improvement Plans.**

See Mitigation Measure 9.A-3a described above for Alternative A. The same mitigation would apply.

**Mitigation Measure 9.B-3b. Include a Dewatering Plan in the Storm Water Pollution and Prevention Plan (SWPPP) Developed and Implemented Pursuant to Mitigation Measure 8.B-1a.**

See Mitigation Measure 9.A-3b described above for Alternative A. The same mitigation would apply.

**Mitigation Measure 9.B-3c. Obtain Grading Permit from the Placer County ESD, Secure a Source for the Transportation and Deposition of Excavated Materials (if deemed necessary in the Final Grading Plan), and Ensure that All Earthwork is Monitored by a Geotechnical Engineer.**

See Mitigation Measure 9A-3c described above for Alternative A. The same mitigation would apply.

#### **ALTERNATIVE C—REDUCED DEVELOPMENT WITH RECREATION ELEMENTS**

**Mitigation Measure 9.C-3a. Submit Final Geotechnical Engineering Report and Improvement Plans.**

See Mitigation Measure 9.A-3a described above for Alternative A. The same mitigation would apply.

Mitigation Measure 9.C-3b. Include a Dewatering Plan in the Storm Water Pollution and Prevention Plan (SWPPP) Developed and Implemented Pursuant to Mitigation Measure 8.C-1a.

See Mitigation Measure 9.A-3b described above for Alternative A. The same mitigation would apply.

Mitigation Measure 9.C-3c. Obtain Grading Permit from the Placer County ESD, Secure a Source for the Transportation and Deposition of Excavated Materials (if deemed necessary in the Final Grading Plan), and Ensure that All Earthwork is Monitored by a Geotechnical Engineer.

See Mitigation Measure 9.A-3c described above for Alternative A. The same mitigation would apply.

#### **ALTERNATIVE D—NO PROJECT**

No mitigation is required.