5.7 AIR QUALITY

This section includes a description of applicable air quality regulations and existing air quality conditions, and an analysis of potential short-term and long-term air quality impacts associated with implementation of Beach Club Alternatives A through E. Mitigation measures are recommended, as necessary, to reduce potentially significant adverse air quality impacts.

5.7.1 REGULATORY BACKGROUND

The project site is located in Douglas County, Nevada, within the Lake Tahoe Air Basin (LTAB). Air quality within the Douglas County portion of the LTAB is regulated by the U.S. Environmental Protection Agency (EPA), the Tahoe Regional Planning Agency (TRPA), and the State of Nevada Division of Environmental Protection (NDEP) Bureau of Air Pollution Control (BAPC) and Bureau of Air Quality Planning (BAQP). Each of these agencies develops rules, regulations, policies, and/or goals to comply with applicable legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent.

Air quality regulations focus on the following air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable and fine particulate matter (PM_{10} and $PM_{2.5}$), and lead. Because these are the most prevalent air pollutants known to be deleterious to human health and extensive health-effects criteria documents are available, they are commonly referred to as "criteria air pollutants."

FEDERAL

At the federal level, the EPA has been charged with implementing national air quality programs. The EPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), enacted in 1970. The most recent major amendments made by Congress were in 1990.

The CAA required the EPA to establish national ambient air quality standards (NAAQS). As shown in Table 5.7-1, the EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, CO, NO_2, SO_2, $PM_{10,}$ $PM_{2.5}$, and lead. The primary standards protect the public health and the secondary standards protect public welfare. The CAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. The EPA has responsibility to review all state SIPs to determine conformation to the mandates of the CAA, and the amendments thereof, and determine if implementation will achieve air quality goals. If the EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area that imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated timeframe may result in sanctions being applied to transportation funding and stationary air pollution sources pollution sources in the air basin.

The EPA has programs for identifying and regulating hazardous air pollutants (HAPs). Title III of the CAAA directed the EPA to promulgate national emissions standards for HAPs (NESHAP). The NESHAP may differ for major sources and area sources of HAPs. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (TPY) of any HAP or more than 25 TPY of any combination of HAPs; all other sources are considered area sources. The emissions standards are to be promulgated in two phases. In the first phase (1992–2000), the EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring maximum available control technology for toxics (MACT). For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), the EPA is required to promulgate health risk–based

emissions standards where deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards.

The CAAA also required the EPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions, at a minimum for benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 required the use of reformulated gasoline in selected areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

STATE

At the state level, the Nevada BAPC and BAQP are the agencies responsible for coordination and oversight of state air pollution control programs, including the Chemical Accident Prevention Program (CAPP), and air quality surveillance in Nevada, except Washoe and Clark counties. The authority for the BAPC and BAQP to implement air pollution control programs is drawn from the Nevada Revised Statutes (NRS) 445B.100 through 445B.825 and 486A.010 through 486A.180. The agencies achieve and maintain air-quality conditions in Douglas County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air-quality issues. The clean-air strategy of the BAPC and BAQP include the preparation of plans and programs for the attainment of ambient-air-quality standards, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources. The BAPC and BAQP also oversee compliance with Nevada and federal laws; prepare SIPs; conduct inspections; observe and review source test data, excess emission reports, and compliance certification reports; investigate air quality complaints; operate an ambient air quality monitoring network; develop and implement strategies to control air pollution from motor vehicles, convert motor vehicle fleets to use cleaner-burning alternative fuels; and coordinate and facilitate prescribed outdoor burning. In addition, as shown Table 5.7-1, the Nevada Administrative Code (NAC) 445B.22097 establishes the Nevada State ambient air quality standards (NSAAQS).

TAHOE REGIONAL PLANNING AGENCY

At the regional level, the TRPA has adopted the following standards.

Environmental Threshold Carrying Capacities

TRPA has adopted Environmental Threshold Carrying Capacities (ETCC) in compliance with the requirements of the TRPA Compact to maintain the natural value of the LTAB and public safety in the region. The current ETCC thresholds are as follows:

Carbon Monoxide

- Numerical Standard: Maintain carbon monoxide concentrations at or below 6.0 parts per million (ppm) averaged over 8 hours.
- Management Standard: Reduce traffic volume on the U.S. Highway 50 (U.S. 50) corridor by 7% during the winter from the 1981 base year, between 4:00 p.m. and 12:00 midnight.

Table 5.7-1
Ambient Air Quality Standards

Pollutant	Averaging Time	TRPA	Nevada[2, 5]	National[1]	
				Primary [2,3]	Secondary [2,4]
Ozone	1-hour	0.08 ppm	0.10 ppm[6] (195 µg/m^3)	-[7]	Same as Primary Standard
	8-hour	–	–	0.08 ppm (157 µg/m^3)	
Carbon Monoxide (CO)	1-hour	–	35 ppm (40 mg/m^3)	35 ppm (40 mg/m^3)	Same as Primary Standard
	8-hour	6 ppm	6 ppm[8] (7 mg/m^3)	9 ppm (10 mg/m^3)	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	–	0.053 ppm (100 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary Standard
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	0.030 ppm (80 µg/m^3)	0.030 ppm (80 µg/m^3)	–
	24-hour	–	0.14 ppm (365 µg/m^3)	0.14 ppm (365 µg/m^3)	–
	3-hour	–	0.5 ppm (1300 µg/m^3)	–	0.5 ppm (1300 µg/m^3)
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean	–	50 µg/m^3	-[10]	Same as Primary Standard
	24-hour		150 µg/m^3	150 µg/m^3	
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	–	–	15 µg/m^3	Same as Primary Standard
	24-hour	–	–	65 µg/m^3	
Lead	Calendar Quarter	–	1.5 µg/m^3	1.5 µg/m^3	Same as Primary Standard

Table 5.7-1
Ambient Air Quality Standards

Pollutant	Averaging Time	TRPA	Nevada[2, 5]	National[1]	
				Primary [2,3]	Secondary [2,4]
Hydrogen Sulfide	1-hour	–	0.08 ppm[9] (112 µg/m^3)	No National Standards	
Visibility-Reducing Particle Matter	8-hour	Regional: 25 Mm-1 (157 km, 97 miles) 50% of the year, 34 Mm-1 (115 km, 71 miles) 90% of the year. Subregional: 50 Mm-1 (31 km, 19 miles) 90% of the year, 125 Mm-1 (31 km, 19 miles) 50% of the year.	–		

[1] National standards (other than ozone, PM, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when 99% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. The $PM_{2.5}$ 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the EPA for further clarification and current federal policies.

[2] Concentration expressed first in units in which it was issued. Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[3] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

[4] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[5] The Director shall use the Nevada standards in considering whether to issue a permit for a stationary source and shall ensure that the stationary source will not cause the Nevada standards to be exceeded in areas where the general public has access.

[6] For the LTAB.

[7] The 1-hour ozone NAAQS was revoked on June 15, 2005.

[8] At or greater than 5,000' above mean sea level.

[9] The ambient air quality standard for hydrogen sulfide does not include naturally occurring background concentrations.

[10] Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, the EPA revoked the annual PM_{10} standard on September 21, 2006.

Sources : TRPA 2002; EPA 2006c ; NAC 2006

Ozone

- Numerical Standard: Maintain ozone concentration below 0.08 ppm averaged over 1 hour.

Regional Visibility

- Numerical Standard: Achieve 156 kilometers (97 miles) at least 50% of the year as measured by aerosol concentrations measured at Bliss State Park monitoring site.
- Numerical Standard: Achieve 115 kilometers (71 miles) at least 90% of the year as measured by aerosol concentrations measured at Bliss State Park monitoring site.
- Management Standard: Reduce wood smoke emissions by 15% of the 1981 base values through technology, management practices, and educational programs.

Subregional Visibility

- Numerical Standard: Achieve 78 kilometers (48 miles) at least 50% of the year as measured by particulate concentrations measured at the South Lake Tahoe monitoring site.
- Numerical Standard: Achieve 31 kilometers (19 miles) at least 90% of the year as measured by particulate concentrations measured at the South Lake Tahoe monitoring site.
- Management Standard: Reduce suspended soil particles by 30% of the 1981 base values through technology, management practices, and educational programs.
- Management Standard: Reduce wood smoke emissions by 15% of the 1981 base values through technology, management practices, and educational programs.
- Management Standard: Reduce vehicle miles of travel by 10% of the 1981 base values.

Atmospheric Deposition

- Water Quality (WQ) Numerical Standard: Reduce dissolved inorganic nitrogen loading to Lake Tahoe from all sources by 25% of the 1973–1981 annual average.
- Management Standard: Reduce dissolved inorganic nitrogen loads from surface runoff by approximately 50%, from groundwater approximately 30%, and from atmospheric sources approximately 20% of the 1973–1981 annual average. This threshold relies on predicted reductions in pollutant loadings from out-of-Basin sources as part of the total pollutant loading reduction.
- Management Standard: Reduce the transport of nitrates into the LTAB and reduce oxides of nitrogen produced in the LTAB consistent with water quality thresholds.
- Management Standard: Reduce vehicles miles of travel in the Lake Tahoe Basin by 10% of the 1981 base year values.

TRPA has also adopted the Regional Transportation Plan-Air Quality Plan for the Lake Tahoe Region to attain and maintain the Environmental Threshold Carrying Capacities. A review of the Environmental Threshold Carrying Capacities thresholds was performed in 2001, and the 2001 Threshold Evaluation Report was published in 2002 (TRPA 2002). A subsequent Draft 2006 Threshold Evaluation Report was released for public comment in April 2006. At the time of publication of this document, this Draft 2006 Threshold Evaluation Report has not been adopted by TRPA.

Code of Ordinances

TRPA adopted Chapter 91 (Air Quality Control) and Chapter 93 (Traffic and Air Quality Mitigation Program) of the TRPA Code of Ordinances. The applicable provisions of these chapters are described below.

Chapter 91 Air Quality Control

The provisions of Chapter 91 apply to direct sources of air pollutions in the Tahoe Region, including certain motor vehicles registered in the region, combustion heaters installed in the region, open burning, stationary sources of air pollution, and idling combustion engines.

Section 91.2, Vehicle Inspection and Maintenance Program, states that to avoid duplication of effort in implementation of an inspection/maintenance program for certain vehicles registered in the CO non-attainment area, TRPA shall work with the affected state agencies to plan for the application of state inspection/maintenance programs to the Tahoe Region.

Section 91.3, Combustion Appliances, establishes emission standards for wood heaters, as well as natural gas or propane-fired water heaters and central furnaces.

Section 91.5.B states that any new stationary source of air pollution that produces emissions for the peak 24-hour period beyond any of the limits in Table II, reproduced as Table 5.7-2 below, shall be considered to have a significant adverse environmental impact. New stationary sources that have a significant adverse environmental impact shall be prohibited.

Table 5.7-2
TRPA Peak 24-hour Period Significance Thresholds

Pollutant	Kilograms	Pounds
Nitrogen Dioxide	11.0	24.2
PM_{10}	10.0	22.0
Volatile Organic Compounds (Reactive Organic Gases)	57.0	125.7
Sulfur Dioxide	6.0	13.2
Carbon Monoxide	100.0	220.5

Source: TRPA Code of Ordinances as amended August 26, 1999

Chapter 93 Traffic and Air Quality Mitigation Program

The purpose of Chapter 93 is to establish fees and other procedures to offset impacts from indirect sources of air pollution. As part of the project application for additional development that would result in an increase of more than 200 daily vehicle trips, a technically adequate analysis of potential traffic and air quality impacts shall be prepared (Section 93.3.B). To offset regional and cumulative impacts, additional development shall contribute to the Air Quality Mitigation Fund. Instead of a contribution, additional development may provide mitigation measures, the cost of which shall be equal to, or greater than, the required contribution to the Air Quality Mitigation Fund (Section 93.3.C). For new residential units, the required contribution would be at least $325.84 per daily vehicle trip (Section 93.3.D).

LOCAL

At the local level, Douglas County has identified the following applicable policies to maintain or improve existing air quality (Douglas County 2007):

- Pursue cost effective air quality management strategies that contribute to improved local and regional air quality.
- Work with NDEP for the establishment of a cost-effective program to measure and monitor air quality in the Carson Valley and other "airsheds," in order to establish base data for future projections.
- Establish standards for roadway surfacing and maintenance which reduce dust generation.
- Maintain regulations which require the upgrade of existing wood burning devices and fireplaces and control the numbers of and set strict performance standards for other wood burning devices in new housing construction.

Promote reduced wood burning by encouraging use of solar and geothermal resources and the use of other energy-efficient strategies.

CRITERIA AIR POLLUTANTS

As discussed above, air quality regulations focus on the following criteria air pollutants: ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. In addition, concentrations of these criteria air pollutants are used as indicators of ambient air quality conditions. A brief description of each criteria air pollutant including source types, formation processes, and health effects is provided below.

Ozone

Ozone is a photochemical oxidant, a substance whose oxygen combines chemically with another substance in the presence of sunlight, and the primary component of smog. Ozone is not directly emitted into the air, but is formed through complex chemical reactions between precursor emissions of reactive organic gases (ROG) and NO_X in the presence of sunlight. ROG are volatile organic compounds that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NO_X are a group of gaseous compounds of nitrogen and oxygen that results from the combustion of fuels.

Ozone in the upper atmosphere (stratosphere) is beneficial as it shield the earth from harmful ultraviolet radiation that is emitted by the sun. However, ozone in the lower atmosphere (troposphere) is a major health and environmental concern. Meteorology and terrain play a major role in ozone formation. Generally, low wind speeds or stagnant air coupled with warm temperatures and clear skies provide the optimum conditions for ozone formation. As a result, summer is generally the peak ozone season. Because of the reaction time involved, peak ozone concentrations often occur far downwind of the precursor emissions. Therefore, ozone is a regional pollutant that often affects large areas. In general, ozone concentrations over or near urban and rural areas reflect an interplay of emissions of ozone precursors, transport, meteorology, and atmospheric chemistry (Godish 1991).

The adverse health effects associated with exposure to ozone pertain primarily to the respiratory system. Scientific evidence indicates that ambient levels of ozone affect not only sensitive receptors, such as asthmatics and children, but healthy adults as well. Exposure to ambient levels of ozone ranging from 0.10 to 0.40 parts per million (ppm) for 1 to 2 hours has been found to significantly alter lung functions by increasing respiratory rates and pulmonary resistance, decreasing tidal volumes, and impairing respiratory mechanics. Ambient levels of ozone above 0.12 ppm are linked to symptomatic responses that include such symptoms as throat dryness, chest tightness, headache, and nausea. In addition to the above adverse health effects, evidence also exists relating ozone exposure to an increase in the permeability of respiratory epithelia; such increased permeability leads to an

increase in responsiveness of the respiratory system to challenges, and the interference or inhibition of the immune system's ability to defend against infection (Godish 1991).

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, and poisonous gas produced by incomplete burning of carbon in fuels, primarily from mobile (transportation) sources. Approximately 77% of the nationwide CO emissions are from mobile sources, and 23% consists of CO emissions from wood-burning stoves, incinerators, and industrial sources.

CO enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells. However, CO combines with hemoglobin much more readily than oxygen does, resulting in a drastic reduction in the amount of oxygen available to the cells. Adverse health effects associated with exposure to CO concentrations include such symptoms as dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (EPA 2006a).

The highest concentrations are generally associated with cold, stagnant weather conditions that occur during the winter. In contrast to ozone, which tends to be a regional pollutant, CO problems tend to be localized. Stateline, Nevada is a known historical CO hotspot (TRPA 2004).

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a brownish, highly reactive gas that is present in urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2 (EPA 2006a). The combined emissions of NO and NO_2 are referred to as NO_X, which are reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog (ozone), the NO_2 concentration in a particular geographical area may not be representative of the local NO_X emission sources.

Inhalation is the most common route of exposure to NO_2. Because NO_2 has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract. The severity of the adverse health effects depends primarily on the concentration inhaled rather than the duration of exposure. An individual may experience a variety of acute symptoms, including coughing, difficulty with breathing, vomiting, headache, and eye irritation during or shortly after exposure. After a period of approximately 4 to 12 hours, an exposed individual may experience chemical pneumonitis or pulmonary edema with breathing abnormalities, cough, cyanosis, chest pain, and rapid heartbeat. Severe, symptomatic NO_2 intoxication after acute exposure has been linked on occasion with prolonged respiratory impairment with such symptoms as chronic bronchitis and decreased lung functions.

Sulfur Dioxide

Sulfur dioxide (SO_2) is produced by such stationary sources as coal and oil combustion, steel mills, refineries, and pulp and paper mills. The major adverse health effects associated with SO_2 exposure pertain to the upper respiratory tract. SO_2 is a respiratory irritant with constriction of the bronchioles occurring with inhalation of SO_2 at 5 ppm or more. On contact with the moist mucous membranes, SO_2 produces sulfurous acid, which is a direct irritant. Concentration rather than duration of the exposure is an important determinant of respiratory effects. Exposure to high SO_2 concentrations may result in edema of the lungs or glottis and respiratory paralysis.

Particulate Matter

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. PM_{10} consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the

atmosphere by condensation and/or transformation of SO_2 and ROG (EPA 2006a). $PM_{2.5}$ includes a subgroup of finer particles with an aerodynamic diameter of 2.5 micrometers or less (EPA 2006a).

The adverse health effects associated with PM_{10} depend on the specific composition of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons (PAH), and other toxic substances adsorbed onto fine particulate matter, which is referred to as the piggybacking effect, or with fine dust particles of silica or asbestos. Generally, adverse health effects associated with PM_{10} may result from both short-term and long-term exposure to elevated concentrations and may include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, alterations to the immune system, carcinogenesis, and premature death (EPA 2006a). $PM_{2.5}$ poses an increased health risk because the particles can deposit deep in the lungs and contain substances that are particularly harmful to human health.

Lead

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, as discussed in detail below, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the EPA set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The EPA banned the use of leaded gasoline in highway vehicles in December 1995 (EPA 2006a).

As a result of the EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector have declined dramatically (95% between 1980 and 1999), and levels of lead in the air decreased by 94% between 1980 and 1999. Transportation sources, primarily airplanes, now contribute only 13% of lead emissions. A recent National Health and Nutrition Examination Survey reported a 78% decrease in the levels of lead in people's blood between 1976 and 1991. This dramatic decline can be attributed to the move from leaded to unleaded gasoline (as well as the removal of lead from soldered cans) (EPA 2006a). Although the ambient lead standards are no longer violated, lead emissions from stationary sources still pose "hotspot" problems in some areas.

5.7.2 AFFECTED ENVIRONMENT

The project site is located within the LTAB. The LTAB includes portions of El Dorado and Placer counties on the California side; and Washoe County, Douglas County, and Carson City Rural District on the Nevada side. The ambient concentrations of air pollutant emissions are determined by the amount of emissions released by pollutant sources and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the emissions released by existing air pollutant sources, discussed below.

TOPOGRAPHY, METEOROLOGY, AND CLIMATE

Lake Tahoe lies in a depression between the crests of the Sierra Nevada and Carson ranges on the California–Nevada border at a surface elevation of approximately 6,260 feet above sea level. The LTAB is defined by the 7,000-foot contour, which is continuous around the lake, except near Tahoe City. The mountains surrounding the lake are approximately 8,000 to 9,000 feet in height on average, with some reaching 10,000 feet.

The constant water temperature of Lake Tahoe, at 600 feet below the surface, is approximately 39ºF (4ºC). This characteristic, in combination with the topographic location of the lake, define one of the LTAB's most important

atmospheric regimes, that in the absence of strong synoptic weather systems, shallow subsidence and radiation inversions occur throughout the year. In addition, the rapid radiation cooling at night regularly generates gentle down-slope nocturnal winds draining from the mountain ridges to the shore and then fanning across the lake (Cahill and Cliff 2000).

Pollutants from local sources are trapped by frequent inversions in the LTAB, greatly limiting the volume of air into which the pollutants are mixed (e.g., diluted) resulting in accumulation and elevated concentrations. Further, each night the down-slope winds transport local pollutants from nearby developed areas out over the lake, increasing the opportunity for pollutants to deposit. This meteorological regime, characterized by weak or calm winds and a strong inversion, is the most common pattern at all times of the year (Cahill and Cliff 2000).

A second important meteorological regime is the transport of pollutants from the Sacramento Valley and San Francisco Bay by upslope winds. This pattern develops when the western slopes of the Sierra Nevada are heated, causing the air to rise in a chimney effect and move upslope to the Sierra crest and over into the LTAB. The strength of this pattern depends on the amount of heating, and thus is strongest in summer, beginning in April and essentially ceasing in late October (Cahill and Cliff 2000).

Other regimes in the LTAB are defined by strong synoptic weather patterns that overcome the dominant terrain-defined meteorology regimes discussed above. The most important is the winter storm regime, which is responsible for precipitation primarily in the form of snow (Cahill and Cliff 2000).

Each of the meteorological regimes has the potential to influence pollution concentrations in the LTAB. Pollution episodes typically occur when local inversions are present, which trap emissions and when conditions allow for the transport of pollution from the western slopes of the Sierra Nevada, the Sacramento Valley, and the San Francisco Bay. Recent studies have even shown spring and fall contributions to local pollution levels from Asia (Cahill and VanCuren 2004). Periods of low pollution concentration are associated with winter storms and high winds. Winter storms dilute the local and upwind pollution with strong vertical mixing and the incorporation of clean North Pacific air (Cahill and Cliff 2000).

Local meteorological conditions are recorded at the Stateline-Harrah's, Nevada Station for the Tahoe Beach Club project site. The annual normal precipitation is approximately 13 inches, which primarily occurs from November through March in the form of snowfall. January temperatures range from a normal minimum of 23ºF to a normal maximum of 42ºF. August temperatures range from a normal minimum of 48ºF to a normal maximum of 78ºF (WRCC 2006a). The annual predominant wind direction and mean speed is from the south at 7 mph (WRCC 2006b, 2006c).

MONITORING STATION DATA AND ATTAINMENT AREA DESIGNATIONS

Criteria air pollutant concentrations are measured at several monitoring stations in the LTAB. The South Lake Tahoe–Sandy Way and South Lake Tahoe–Airport Road stations are the closest monitoring stations to the project site with recent data for ozone, CO, NO_2, $PM_{10,}$ and $PM_{2.5}$. In general, the ambient air quality measurements from these monitoring stations are representative of the air quality in the vicinity of the project site. Table 5.7-3 summarizes the air quality data from these stations for the years 2003 through 2005. The national standards for ozone, CO, and NO_2 were not exceeded from 2003 to 2005. Although the national CO standards were not exceeded during this time at this monitoring station, Stateline, Nevada is a historical CO hotspot (TRPA 2004).

EPA and TRPA use this type of monitoring data to designate areas according to attainment status for criteria air pollutants established by the agencies. The purpose of these designations is to identify those areas with air quality problems and initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. Unclassified is used in areas that cannot be classified on the basis of available information as meeting or not meeting the standards. The most current national and TRPA attainment designations for the Douglas County portion of the LTAB are shown in Table 5.7-4 for each criteria air pollutant.

Table 5.7-4 also contains the draft TRPA attainment designations from the recently released Draft 2006 Threshold Evaluation (TRPA 2007).

Table 5.7-3
Summary of Annual Air Quality Data (2003-2005)[1]

South Lake Tahoe-Sandy Way and Airport Road Air Quality Monitoring Stations

	2003	2004	2005
OZONE			
Maximum concentration (1-hr/8-hr, ppm)	0.075 / 0.066	0.066 / 0.058	0.073 / 0.067[2]
Number of days national standard exceeded (1-hr/8-hr)	0 / 0	0 / 0	0 / 0[2]
CARBON MONOXIDE (CO)			
Maximum concentration (1-hr/8-hr, ppm)	2.4 / 1.51	2.2 / 1.18	-
Number of days national standard exceeded (1-hr/8-hr)	0 / 0	0 / 0	-
NITROGEN DIOXIDE ($N0_2$)			
Maximum concentration (1-hr, ppm)	0.052	0.055	-
Annual Average (ppm)	0.010	-	-
RESPIRABLE PARTICULATE MATTER (PM_{10})			
Maximum Concentration ($\mu g/m^3$)	61.0	47.0	38.0
Number of days national standard exceeded (measured/ calculated)[3]	0 / 0.0	0 / -	0 / -
FINE PARTICULATE ($PM_{2.5}$)			
Maximum Concentration ($\mu g/m^3$)	21.0	20.0	-
Number of days national standard exceeded (measured[3])	0	0	-

[1] Where, µg/m3 = micrograms per cubic meter and ppm = parts per million.

[2] Data from South Lake Tahoe - 1901 Airport Road Station reported for 2005 1- and 8-hour ozone concentrations only.

[3] Measured days are those days that an actual measurement was greater than the level of the state daily standard or the national daily standard. Measurements are typically collected every 6 days. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.

Sources: EPA 2006a

ATMOSPHERIC DEPOSITION

Lake Tahoe's clarity has been decreasing by approximately 1 foot per year for over 30 years (see Section 5.5, Hydrology and Water Quality, for more information). Clarity loss has historically been attributed to increased inputs of the nutrients nitrogen and phosphorous. These nutrients cause an increase in the growth of algae, which results in reduced clarity. Recent data indicate that particles in the water also substantially impair lake clarity, and possibly even more than algal growth (NLT Research Symposium 2004). Data from the late 1970s and early 1980s indicate that nitrogen deposition from the atmosphere was contributing to the nutrient load in the lake. At that time, it was believed that excess nitrogen was having the largest impact on the loss of lake clarity and TRPA adopted a threshold indicator for nitrogen deposition to the lake. Data collected in the 1980s and 1990s indicated that phosphorous also plays a significant role in lake clarity, and in some years its role was equal to or more significant than nitrogen. Research published in 1994 found that phosphorous is also depositing from the air into the lake (Jassby et al. 1994). This has prompted further study into the role of atmospheric deposition, with data indicating that phosphorous loading to the lake must also be reduced if the loss of clarity is to be slowed and, hopefully, reversed. Although TRPA has not yet adopted indicators for phosphorous deposition, it is expected that as the indicator update process progresses, an indicator will be included for this nutrient. As discussed above, particle deposition to the lake is also important to clarity. However, it is not yet known if the current federal and state standards for PM are stringent enough to also address the role of PM in lake clarity loss. This is also being evaluated in the indicator update process.

Table 5.7-4
Attainment Status Designations[1]

Pollutant	National Designation[4]	TRPA Designation	
		Adopted (2001)	Draft (2006)
Ozone - 1-hour	No applicable standard[2]	Nonattainment	Nonattainment
Ozone - 8-hour	Attainment/Unclassified	-	
PM_{10}	Attainment/Unclassified	Attainment	Nonattainment
$PM_{2.5}$	Attainment/Unclassified	-	-
Carbon Monoxide	Attainment/Unclassified	Attainment	Nonattainment
Nitrogen Dioxide	Attainment/Unclassified	-	
Sulfur Dioxide	Attainment/Unclassified	-	-
Lead (Particulate)	Attainment/Unclassified	-	-
Hydrogen Sulfide	-	-	-
Sulfates	-	-	
Visibility Reducing Particulates	-	Region: Nonattainment Subregion: Attainment	Region: Attainment Subregion: Attainment
Traffic Volume	-	Unknown/Attainment[3]	Attainment
Wood Smoke	-	Unknown (Likely Nonattainment)[3]	Unknown
Vehicle Miles of Travel	-	Nonattainment	Nonattainment
Atmospheric Deposition - TRPA Interim Target	-	Attainment	-
Atmospheric Deposition - TRPA Standard	-	Unknown[3]	Unknown

[1] For the Douglas County portion of the LTAB.

[2] The 1-hour ozone NAAQS was revoked on June 15, 2005.

[3] The status of these standards is unknown because the technology necessary to determine base year values does not exist, and the original standards and indicators were not well defined.

[4] Nonattainment: any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the national primary or secondary ambient air quality standard for the pollutant.

Attainment: any area that meets the national primary or secondary ambient air quality standard for the pollutant.

Unclassifiable: any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

Maintenance: any area that has been redesignated from nonattainment to attainment due to successful completion of each of the conditions numbered below.

a. Section 107(d)(3)(E) of the 1990 CAAA states that the following criteria must be met in order for an area to be redesignated from nonattainment to attainment:
b. The EPA has determined that the national ambient air quality standard (NAAQS) has been attained. This standard is 0.12 ppm for ozone.
c. The applicable State Implementation Plan (SIP) has been fully approved by the EPA under section 110(k).
d. The EPA has determined that the improvement in air quality is due to permanent and enforceable reductions in emissions.
e. The State has met all applicable requirements for the area under section 110 and part D.
f. The EPA has fully approved a maintenance plan, including a contingency plan, for the area under section 175A.2.

Sources: EPA 2006a, TRPA 2002, TRPA 2007

5.7.3 ENVIRONMENTAL CONSEQUENCES AND RECOMMENDED MITIGATION MEASURES

CRITERIA OF SIGNIFICANCE

For the purpose of this analysis, the following thresholds of significance, as identified by TRPA, have been used to determine whether implementation of the proposed project would result in significant air quality impacts. The proposed project would result in significant air quality impacts if implementation would:

- conflict with or obstruct implementation of an applicable air quality plan,
- violate any air quality standard or contribute substantially to an existing or projected air quality violation (Table 5.7-1),
- result in a cumulatively considerable net increase of any criteria air pollutant for which the project region is nonattainment under any applicable national or state ambient air quality standards (including releasing emissions that exceed quantitative thresholds for ozone precursors),
- expose sensitive receptors to substantial pollutant concentrations (including HAPs),
- create objectionable odors affecting a substantial number or people,
- cause construction-generated or long-term operational (regional) emissions of ROG, NO_X, or PM_{10} to exceed mass emissions of 82 lb/day [Note: Although mass emissions thresholds have not been adopted by the state of Nevada, Nevada BAPC and BAQP, or Douglas County, a threshold of 82 lb/day (used by other Tahoe Basin jurisdictions) is appropriate to determine whether project implementation would exceed TRPA's numerical thresholds and/or affect related- attainment designations (e.g., atmospheric deposition)].
- cause long-term operational (e.g., regional and local) emissions to exceed TRPA's numerical ETCC thresholds (e.g., 6 ppm [CO, 8-hr], 0.08 ppm [ozone, 1-hr]),
- cause construction-generated emissions to exceed NAC 445B.7665 (Heavy-duty Equipment Opacity), NAC 445B.22017 (Visible Emissions), or NAC 445B.22037 (PM Emissions-Fugitive Dust) standards, or
- cause project-generated stationary-source emissions to exceed TRPA's peak 24-hour period significance thresholds established by Chapter 91 of the Code of Ordinances (Table 5.7-2).

In addition, the required contribution to the Air Quality Mitigation Fund for new residential units, pursuant to TRPA Code of Ordinances (Section 93.3.D), is discussed in the traffic analysis of this report (Section 5.6, "Transportation and Parking") because it is a direct function of the number of daily vehicle trips generated by the project and does not concern emissions from stationary and area sources.

Although the existing Tahoe Shores Mobile Home Park generates approximately 696 daily vehicle trip, the long-term operational (both local and regional) air quality impacts are determined based on the total daily vehicle trips generated by the proposed project alternatives rather than the net increase (new vehicle trips less existing vehicle trips). This approach has been taken because the existing mobile homes would be relocated, and their new location is unknown at this time; therefore, it is unknown where the associated vehicle trips would occur (within or outside of the Basin). This is a conservative approach to ensure disclosure and mitigation of all potential air quality impacts.

ALTERNATIVE A – PROPOSED PROJECT

IMPACT 5.7.A-1 **Short-Term Construction-Generated Criteria Air Pollutant and Precursor Emissions.** *Unmitigated, NO_X emissions would exceed the significance threshold of 82 lb/day; therefore, construction-generated criteria air pollutant and precursor emissions under Alternative A could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of the LTAB with respect to the TRPA standards. This would be a* ***significant impact.***

Construction emissions are short-term or temporary in duration and have the potential to represent a significant impact with respect to air quality. ROG and NO_X emissions are primarily associated with gas and diesel equipment exhaust and the application of architectural coatings. Fugitive PM_{10} dust emissions are primarily associated with site preparation and vary as a function of such parameters as soil silt content, soil moisture, wind speed, acreage of disturbance area, and VMT by construction vehicles on- and off-site.

Site preparation and building phases of the proposed project would result in the temporary generation of ROG, NO_X, or PM_{10} emissions from demolition, excavation, grading, and clearing; use of off-road equipment; material import/export; worker commute exhaust emissions; paving; application of architectural coatings; and other miscellaneous activities.

Short-term construction emissions of ROG, NO_X, or PM_{10} for Alternative A were modeled using the TRPA-approved URBEMIS 2002 Version 8.7 computer program and EMFAC 2002 emission factors as recommended by the TRPA. URBEMIS is designed to model construction emissions for land use development projects and allows for the input of project-specific information. Input parameters were based on default model settings and information provided in Chapter 3, "Project Description." The modeled maximum daily construction emissions are summarized in Table 5.7-5, described in more detail below, and provided in Appendix D. (Note: the construction emissions estimates shown in Table 5.7-5 show construction starting in 2007. While project delays have made construction during 2007 infeasible, the emissions estimates are unchanged. Because equipment and fuel used in construction equipment continue to get cleaner as time passes, use of 2007 emission factors yields a conservative estimate of construction emissions.)

Based on the modeling conducted, project construction would result in worst-case maximum unmitigated daily emissions of approximately 14.2 lb)/day of ROG, 101.6 lb/day of NO_X, and 49.0 lb/day of PM_{10} (Table 5.7-5). Daily unmitigated construction-generated emissions would exceed the significance threshold of 82 lb/day for NO_X. Construction-generated emissions, specifically PM_{10}, could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of the LTAB with respect to the TRPA standards (e.g., 1-hour ozone and visibility-reducing particulate standards). This would be a **significant impact**.

Mitigation Measure 5.7.A-1. Reduce Construction-Generated Emissions of ROG, NO_X, and PM_{10}.

In accordance with the TRPA Code of Ordinances, the applicant shall implement the following mitigation measures during construction of the proposed project. In addition to the mitigation measures identified below, construction of the project is required to comply with all applicable TRPA, BAQP, and BAPC codes, particularly TRPA Code of Ordinances Chapter 25 (Best Management Practices), Chapter 64 (Grading Standards), and Chapter 91 (Air Quality Control).

- Activities disturbing the soil shall not occur between October 15 and May 1 of each year, unless approval has been granted by TRPA. Prior to October 15, all construction sites shall be winterized.

Table 5.7-5
Summary of Modeled Worst-Case Daily Short-Term Construction-Generated Emissions under Alternative A [1]

Source	lb/day		
	ROG	NO_X	PM_{10}
Initial Site Preparation (Demolition & Grading) Phase[1]			
Demolition (Summer 2007)			
Fugitive Dust	-	-	1.7
Off-Road Diesel	12.7	85.7	3.5
On-Road Diesel	1.3	15.7	0.4
Worker Commute	0.2	0.2	-
Maximum Daily Total, Unmitigated	**14.2**	**101.6**	5.6
Site Grading (Fall 2007-Spring 2008)			
Fugitive Dust	-	-	47.0
Off-Road Diesel	7.8	51.1	2.0
On-Road Diesel	-	-	-
Worker Commute	-	-	-
Maximum Daily Total, Unmitigated	7.8	51.1	**49.0**
Building Construction Phase (Summer 2008-Fall 2011)[2]			
Building Subphase[2]			
Off-Road Diesel	9.6	62.8	2.4
Worker Commute	0.3	0.2	-
Maximum Daily Total, Unmitigated	9.9	63.0	2.4
Asphalt Paving Subphase[2]			
Off-Gassing	0.2	-	-
Off-Road Diesel	2.0	11.6	0.3
On-Road Diesel	-	0.2	-
Worker Commute	-	-	-
Maximum Daily Total, Unmitigated	2.2	11.8	0.3
Architectural Coating Subphase[2]			
Off-Gassing	4.9	-	-
Worker Commute	0.3	0.1	-
Maximum Daily Total, Unmitigated	5.2	0.1	-

[1] Modeled emissions from demolition were based on the following assumptions from URBEMIS2002 Version 8.7.0 default model settings, EMFAC 2002 emission factors, and information in the Project Description,: duration of 2.6 months starting summer 2007, total demolition volume of 150,000 cubic feet (4,000 cubic feet/day), on-road truck travel of 222 miles to remove material, and use of 2 off-highway trucks, 2 tractors/loaders/backhoes, and 2 other pieces 8 hours per day. Modeled emissions from site grading were based on the following assumptions from URBEMIS2002 Version 8.7.0 default model settings or information in the Project Description: duration of 5.2 months, use of 0.5 excavator, 0.5 grader, 1 off-highway truck, 0.5 tractor/loader/backhoe, and 1 other piece, total area of 19.63 acres, and a maximum daily disturbed area of 4.9 acres. Fractional equipment input is allowed by the model and more accurately reflects resultant emissions. The on-site construction equipment was determined based on the project description, and the maximum daily area actively disturbed on the project site. Hours of equipment operation per day assumes compliance with TRPA Code Section 62.4.A and TRPA's exemption for construction noise between 8:00 AM and 6:30 PM, as discussed in Section 5.8, Noise. Construction activities that involve soil disturbance must occur between May 1 and October 15 to comply with TRPA Code Section 62.4.A unless special approval has been granted by TRPA.

[2] Modeled emissions from building construction were based on the following assumptions from URBEMIS2002 Version 8.7.0 default model settings and information in the Project Description: duration of 44.2 months starting summer 2008, use of 0.5 crane, 1 off-highway truck, 0.5 rough terrain forklift, 0.5 rubber tired dozer, 0.5 rubber tired loader, and 1 other piece (0.5 grader, 0.5 paver, and 0.5 roller for asphalt subphase) 8 hours per day. An emission factor of 0.0013 pounds per square foot was used for architectural coatings emissions to reflect the expected use of low VOC content architectural coatings in anticipation of the project's objective to achieve Leadership in Energy and Environmental Design (LEED®) Silver Certification. Asphalt emissions are based on default emission factors and time duration of URBEMIS2002 to pave a total of 3.0 acres of area.

See Appendix D for detailed input parameters and modeling results.

Sources: Modeling performed by EDAW 2006.

- Dust control measures shall be required for any grading activity creating substantial quantities of dust. Dust control measures shall be approved by TRPA prior to groundbreaking. Recommended dust control measures include:

  - Earth-moving construction equipment shall be cleaned with water once per day.

  - Soil binders shall be spread on unpaved roads and employee/equipment parking areas.

  - Apply approved chemical soil stabilizers according to manufacturer specifications, to all-inactive construction areas (previously graded areas which remain inactive for 96 hours).

  - The contractor shall wet broom or wash streets if silt is carried over to adjacent public thoroughfares.

  - All grading operations shall be suspended when wind speeds (as instantaneous gusts measured by an on-site anemometer) exceed 25 mph and dust is impacting adjacent properties. Wind speeds shall be measured with an anemometer on-site a minimum of once per day. Additional anemometer measurements shall be conducted if wind conditions noticeably increase or are forecast to be greater than 15 mph.

  - The area and extent of all excavation and soil disturbance shall be minimized.

  - The speed of any vehicles and equipment traveling across unpaved areas shall not exceed 15 miles per hour (mph) unless the road surface and surrounding area is sufficiently stabilized to prevent vehicles and equipment traveling more than 15 mph from emitting dust exceeding Ringlemann 2 or visible emissions from crossing the property boundary line. [Note: The Ringlemann Chart/System is a scheme, developed by a Maximillian Ringlemann, to determine the "density" of a smoke plume whereby graduated shades of gray, varying by five equal steps between white and black, may be accurately reproduced by means of a rectangular grill of black lines of definite width and spacing on a white background. Opacity is a visual evaluation of the amount of one's view that is obscured by a dust plume (i.e., the amount of visible light that does not pass through the dust plume).]

  - The applicant shall limit the opacity of fugitive dust resulting from construction operations such that dust leaving the project site boundary shall not obscure an observer's view to a degree equal to or greater than does smoke as dark or darker in shade as that designated as No. 2 on the Ringlemann Chart (i.e., 40% opacity). Refer to above mitigation measure for definition of the Ringlemann Chart/System and opacity.

- The prime contractor shall comply with NAC 445B.7665 Standards of opacity for heavy-duty equipment.

- The applicant shall minimize idling time to 5 minutes for all heavy-duty equipment when not engaged in work activities.

- No open burning of removed vegetation shall occur during infrastructure improvements. Vegetative material shall be chipped or delivered to waste-to-energy facilities.

- Construction contracts shall include language that prohibits the use of all heavy duty off-road diesel equipment on days when air quality advisories are issued because of special circumstances such as high levels of particulate matter generated by wildfires circumstances.

Per URBEMIS, implementation of Mitigation Measure 5.7.A-1 would reduce fugitive PM_{10} dust emissions a minimum of 50% and prevent dispersion, thereof, beyond the property boundary. Also based on the URBEMIS modeling, implementation of Mitigation Measure 5.7.A-1 would also reduce diesel equipment exhaust emissions of ROG, NO_X, or PM_{10} a minimum of 5%, 20%, and 45%, respectively. Therefore, project construction would result in worst-case mitigated daily emissions of approximately 13.5 lb/day of ROG, 81.3 lb/day of NO_X, and 24.5

lb/day of PM_{10}. With implementation of Mitigation Measure 5.7.A-1, Impact 5.7.A-1 would be **less than significant.**

IMPACT 5.7.A-2 Long-Term Operational (Regional) Criteria Air Pollutant and Precursor Emissions. *Because long-term operational emissions would not exceed TRPA's stationary source thresholds or the mass emission thresholds for NO_X, implementation of Alternative A would not violate an air quality standard, contribute substantially to an existing or projected air quality violation, expose sensitive receptors to substantial pollutant concentrations, or conflict with or obstruct implementation of the applicable air quality plan. This impact would be* ***less than significant****.*

Regional stationary-, area- and mobile-source emissions of ROG, NO_X, or PM_{10}, CO, and SO_X associated with implementation of the proposed project were estimated using URBEMIS 2002 Version 8.7.0 computer program, which is designed to model emissions for land use development projects. URBEMIS allows land use selections that include project location specifics and trip generation rates. URBEMIS projects stationary- and area-source emissions from estimated use of natural gas, wood stoves, fireplaces, landscape maintenance equipment, and consumer products; and mobile-source emissions associated with vehicle trips. Project-generated emissions were estimated based on proposed land uses presented in Chapter 3, "Project Description," projected trip generation presented in Section 5.6, "Transportation and Parking" (e.g., 303 daily vehicle trip ends and 1,001 VMT for the proposed uses only), and default model setting for 2010 conditions. The residential units would be equipped with natural gas fireplaces and the beach club would have a single large wood-burning fireplace. Project-related stationary sources (e.g., natural gas fired water heaters and central furnaces) would comply with Section 91.3 of the TRPA Code of Ordinances. Project implementation would not include the construction or operation of any major stationary sources of emissions.

The modeled maximum daily operational emissions under Alternative A are summarized in Table 5.7-6, described in more detail below, and provided in Appendix D.

Based on the modeling conducted, project operations would result in worst-case maximum unmitigated daily emissions of approximately 24.8 lb/day of ROG, 16.2 lb/day of NO_X, 11.4 lb/day of PM_{10}, 128.1 lb/day of CO, and 0.1 lb/day of SO_X, which would not exceed any of the applicable thresholds as shown in Table 5.7-6. In addition, because the significance thresholds approximately correlate with reductions from heavy-duty vehicles and land use project emission reduction requirements in the SIP, project implementation would not conflict with any air quality planning efforts. Furthermore, because the project's operational emissions of NO_X would not exceed the NO_X threshold, Alternative A would not affect TRPA's attainment designation for atmospheric deposition. Thus, long-term operational emissions under Alternative A would not violate an air quality standard, contribute substantially to an existing or projected air quality violation, expose sensitive receptors to substantial pollutant concentrations, or conflict with or obstruct implementation of the applicable air quality plan. This impact would be **less than significant**.

The traffic analysis in Section 5.6, "Transportation and Parking," discusses the contribution to the Air Quality Mitigation Fund, as required by Chapter 93.3.D of the TRPA Code of Ordinances. This discussion is included in the traffic analysis because the contribution amount is a direct function of the number of daily vehicle trips generated by the project, rather than the actual emissions from stationary, area, and mobile sources.

Mitigation Measures

No mitigation is required.

Table 5.7-6
Summary of Modeled Long-Term Operational (Regional) Emissions under Alternative A

Source-Type	lb/day				
	ROG	NO_X	PM_{10}	CO	SO_X
SUMMER					
Stationary Source[1]	0.1	1.3	-	0.6	-
Area Source[2]	7.5	-	-	2.5	-
Mobile Source[3]	4.9	6.1	5.3	50.0	-
Total	12.5	7.4	5.3	53.1	-
WINTER					
Stationary Source[1]	7.4	2.1	1.2	9.0	-
Area Source[2]	7.2	-	-	-	-
Mobile Source[3]	5.3	7.2	5.3	61.8	-
Total	19.9	9.3	6.5	70.8	-
THRESHOLDS					
Mass Emissions[4]	82.0	82.0	82.0	—	—
TRPA (stationary sources only)[5]	125.7	24.2	22.0	220.5	13.2

[1] Includes natural gas usage (e.g., from water heaters and central furnaces) and fireplaces.

[2] Area-source emissions include emissions from landscaping, application of architectural coatings, and consumer products, and are estimated based on default model settings, except an emission factor of 0.0013 pounds per square foot was used to reflect the project's use of low VOC content architectural coatings.

[3] Mobile-source emissions were estimated based on default model settings and trip generation rates and trip lengths obtained from the traffic analysis prepared for this project under buildout conditions for 2010.

[4] Mass Emission Threshold applies to the sum of stationary, area, and mobile sources for NO_X only.

[5] TRPA Thresholds apply to the stationary-source emissions only.

Source: Modeling conducted by EDAW 2007

IMPACT 5.7.A-3 **Long-Term Operational (Local) Mobile-Source Carbon Monoxide Emissions.** *Long-term operational (local) mobile-source CO emissions under Alternative A would not violate an air quality standard (i.e., 8-hour TRPA standard of 6 ppm), contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. This impact would be* ***less than significant.***

CO concentration is a direct function of motor vehicle activity (e.g., idling time and traffic flow conditions), particularly during peak commute hours, and meteorological conditions. Under specific meteorological conditions, CO concentrations may reach unhealthy levels with respect to local sensitive land-uses such as residential areas, schools, and hospitals. As a result, the analysis of CO emissions is at a local level.

The Transportation Project-Level Carbon Monoxide Protocol (Garza et al. 1997) states that a signalized intersection that operates at an unacceptable level of service (LOS) represents a potential for a CO violation, also known as a "hotspot," and must undergo a quantitative screening-level analysis. Thus, an analysis of CO concentrations is typically recommended for receptors located near signalized intersections that are projected to operate at LOS E or F.

According to the traffic analysis (Section 5.6 of this EIS), no signalized intersections that would be affected by the project site currently operate at LOS E or F, and no signalized intersections would operate at LOS E or F as a result of project-generated traffic (Table 5.6-4). Long-term operational (local) mobile-source CO emissions under Alternative A would not violate an air quality standard (i.e., 8-hour TRPA standard of 6 ppm), contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

IMPACT 5.7.A-4 **Odor Emissions.** *Neither construction nor operation of the proposed project would create objectionable odors affecting a substantial number of people. This impact would be considered* ***less than significant.***

The occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the presence of sensitive receptors. Although offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to considerable distress and often generating citizen complaints to local governments and regulatory agencies.

Project implementation would not result in any major sources of odor as the project type is not one of the common types of facilities that are known to produce odors (e.g., landfill, wastewater treatment plant). The nearest potential source of odor would be the Douglas County Sewer Improvement District's pump station, located just north of the project site. However, the pump station is enclosed; therefore, potential odorous emissions would be contained, and would not disperse in the direction of, or otherwise affect, the proposed project site. The Douglas County Sewer Improvement District's wastewater treatment plant, located at Round Hill, is approximately 2 miles from the project site. Because of the distance from the project site, the treatment plant also does not pose a significant source of odor. Diesel exhaust from the use of on-site construction equipment would be intermittent and temporary, and would dissipate rapidly from the source with an increase in distance. This would also be the case for any residents who may occupy on-site units before construction of other buildings is complete. Also, because all of the initial site preparation would occur before any structures are built and occupied; no residents would be present during most of the heavy-duty equipment operation. Thus, neither project construction nor operation of Alternative A would create objectionable odors affecting a substantial number of people. This impact would be **less than significant.**

Mitigation Measures

No mitigation is required.

IMPACT 5.7.A-5 **Hazardous Air Pollutant Emissions.** *Neither construction nor operation of Alternative A would result in the exposure of sensitive receptors to substantial HAP emissions. This impact would be* ***less than significant.***

The exposure of sensitive receptors to emissions of HAP can occur during both the construction and operational phases of a project, as discussed separately below.

Construction of the proposed project would result in short-term diesel exhaust emissions from on-site heavy duty equipment. Construction of Alternative A would result in the generation of diesel PM emissions from the use of off-road diesel equipment required for site grading and excavation, paving, and other construction activities. According to the ARB (2003), the potential cancer risk from the inhalation of diesel PM, as discussed below, outweighs the potential non-cancer health impacts.

It is important to note that construction equipment emissions will be reduced over the period of project development. In January 2001, the EPA promulgated a Final Rule to reduce emission standards for 2007 and subsequent model year heavy-duty diesel engines. These emission standards represent a 90% reduction in NO_X, 72% reduction of non-methane hydrocarbon (NMHC) emissions, and 90% reduction of PM emissions in comparison to the 2004 model year emission standards.

More specifically, the dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to HAP emission levels that exceed applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose

is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. The risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to HAP emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project (Salinas, pers. comm., 2004). Because the use of off-road construction equipment would be temporary in combination with the highly dispersive properties of diesel PM (Zhu and Hinds 2002), future reductions in exhaust emissions, and the small scale of the proposed construction-related activities, short-term construction activities would not expose sensitive receptors to substantial HAP emissions.

The proposed project would not include the construction or operation of any major stationary sources of HAP emissions, or result in an increase in mobile-source HAP emissions (e.g., diesel truck traffic). In addition, there are no major existing sources of HAPs in the vicinity of the project site. Nonetheless, all sources having the potential to emit HAPs are required to obtain permits. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including specifically Chapter 91 (Air Quality Control) Sections 91.5.C (Offsets Permitted) and 91.5.D (Best Available Control Technology). Given that compliance with applicable standards is required for the development and operation of facilities that may emit HAPs, the HAP emissions at the project site are expected to be within established standards. Thus, neither construction nor operation of Alternative A would result in the exposure of sensitive receptors to substantial TAC emissions. This impact would be **less than significant.**

Mitigation Measures

No mitigation is required.

ALTERNATIVE B – TWO-LOT ALTERNATIVE SINGLE-FAMILY ESTATES

IMPACT 5.7.B-1 Short-Term Construction-Generated Criteria Air Pollutant and Precursor Emissions. *Unmitigated, daily NO_X emissions would exceed the significance threshold of 82 lb/day, construction-generated criteria air pollutant and precursor emissions under Alternative B could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of the LTAB with respect to the TRPA standards. This would be a significant impact.*

Because Alternative B includes two single-family estates with amenities rather than higher density multifamily residential uses, short-term construction-generated emissions of ROG, NO_X, and PM_{10} would be substantially less than those of Alternative A for the building phase. Unmitigated maximum daily emissions from demolition and/or removal of existing structures with the Tahoe Shores Mobile Home Park, and site grading and underground utility work would be almost identical to those under Alternative A. The modeled maximum daily construction emissions are summarized in Table 5.7-7 and described in more detail below and in Appendix D.

Based on the modeling conducted, construction of Alternative B would result in worst-case unmitigated daily emissions of approximately 14.2 lb/day of ROG, 101.6 lb/day of NO_X, and 49.0 lb/day of PM_{10}. Daily unmitigated construction-generated emissions would exceed the significance threshold of 82 lb/day for NO_X. Construction-generated emissions under Alternative B, specifically PM_{10}, could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of the LTAB with respect to the TRPA standards (e.g., 1-hour ozone and visibility-reducing particulate standards). This would be a **significant impact.**

Table 5.7-7
Summary of Modeled Worst-Case Daily Short-Term Construction-Generated Emissions under Alternative B [1]

Source	lb/day		
	ROG	NO_X	PM_{10}
Initial Site Preparation (Demolition & Grading) Phase[1]			
Demolition (Summer 2007)			
Fugitive Dust	-	-	1.7
Off-Road Diesel	12.7	85.7	3.5
On-Road Diesel	1.3	15.7	0.4
Worker Commute	0.2	0.2	-
Maximum Daily Total, Unmitigated	**14.2**	**101.6**	5.6
Site Grading (Fall 2007-Spring 2008)			
Fugitive Dust	-	-	47.0
Off-Road Diesel	7.8	51.1	2.0
On-Road Diesel	-	-	-
Worker Commute	-	-	-
Maximum Daily Total, Unmitigated	7.8	51.1	**49.0**
Building Construction Phase (Summer 2008-Fall 2011)[2]			
Building Subphase[2]			
Off-Road Diesel	5.7	37.9	1.4
Worker Commute	-	-	-
Maximum Daily Total, Unmitigated	5.7	37.9	1.4
Asphalt Paving Subphase[2]			
Off-Gassing	-	-	-
Off-Road Diesel	2.0	11.6	0.3
On-Road Diesel	-	-	-
Worker Commute	-	-	-
Maximum Daily Total, Unmitigated	2.0	11.6	0.3
Architectural Coating Subphase[2]			
Off-Gassing	0.1	-	-
Worker Commute	-	-	-
Maximum Daily Total, Unmitigated	0.1	-	-

[1] Modeled emissions from demolition were based on the following assumptions from URBEMIS2002 Version 8.7.0 default model settings, EMFAC 2002 emission factors, and information in the Project Description,: duration of 2.6 months starting summer 2007, total demolition volume of 150,000 cubic feet (4,000 cubic feet/day), on-road truck travel of 222 miles to remove material, and use of 2 off-highway trucks, 2 tractors/loaders/backhoes, and 2 other pieces 8 hours per day. Modeled emissions from site grading were based on the following assumptions from URBEMIS2002 Version 8.7.0 default model settings or information in the Project Description: duration of 5.2 months, use of 0.5 excavator, 0.5 grader, 1 off-highway truck, 0.5 tractor/loader/backhoe, and 1 other piece, total area of 19.63, and a maximum daily disturbed area of 4.9 acres. Fractional equipment input is allowed by the model and more accurately reflects resultant emissions. The on-site construction equipment was determined based on the project description, and the maximum daily area actively disturbed on the project site. Hours of equipment operation per day assumes compliance with TRPA Code Section 62.4.A and TRPA's exemption for construction noise between 8:00 AM and 6:30 PM, as discussed in Section 5.8, Noise. Construction activities that involve soil disturbance must occur between May 1 and October 15 to comply with TRPA Code Section 62.4.A unless special approval has been granted by TRPA.

[2] Modeled emissions from building construction were based on the following assumptions from URBEMIS2002 Version 8.7.0 default model settings and information in the Project Description: duration of 44.2 months starting summer 2008, use of 0.5 crane, 1 off-highway truck, 0.5 rough terrain forklift, 0.5 rubber tired dozer, 0.5 rubber tired loader, and 1 other piece (0.5 grader, 0.5 paver, and 0.5 roller for asphalt subphase) 8 hours per day. An emission factor of 0.0013 pounds per square foot was used for architectural coatings emissions to reflect the expected use of low VOC content architectural coatings. Asphalt emissions are based on default emission factors and time duration of URBEMIS2002 to pave a total of 3.0 acres of area.

See Appendix D for detailed input parameters and modeling results.

Sources: Modeling performed by EDAW 2006.

Mitigation Measure 5.7.B-1. Reduce Construction-Generated Emissions of ROG, NO_X, and PM_{10}.

See Mitigation Measure 5.7.A-1 described above for Alternative A. The same mitigation measure would apply.

Implementation of Mitigation Measure 5.7.B-1 would reduce Impact 5.7.B-1, to a **less-than-significant** level.

IMPACT 5.7.B-2 Long-Term Operational (Regional) Criteria Air Pollutant and Precursor Emissions. *Because long-term operational emissions would not exceed TRPA's stationary source thresholds or the mass emission thresholds for NO_X , implementation of Alternative B would not violate an air quality standard, contribute substantially to an existing or projected air quality violation, expose sensitive receptors to substantial pollutant concentrations, or conflict with or obstruct implementation of the applicable air quality plan. This impact would be* ***less than significant****.*

Regional stationary-, area-, and mobile-source emissions under Alternative B were estimated based on proposed land use type (two single-family estates), the change in trip generation from the traffic analysis prepared for this project in Section 5.6, "Transportation and Parking" (e.g., 20 daily vehicle trip ends for the proposed uses only), and default model setting for 2010 conditions. The modeled maximum daily operational emissions under Alternative B are summarized in Table 5.7-8, described in more detail below, and provided in Appendix D.

Based on the modeling conducted, Alternative B operations would result in worst-case maximum unmitigated daily emissions of approximately 0.2 lb/day of ROG, 0.3 lb/day of NO_X, 0.1 lb/day of PM_{10}, 1.5 lb/day of CO, and negligible amounts (less than 0.1 lb/day) of SO_X, which would not exceed any of the applicable thresholds as shown in Table 5.7-8. In addition, because the significance thresholds approximately correlate with reductions from heavy-duty vehicles and land use project emission reduction requirements in the SIP, project implementation would not conflict with any air quality planning efforts. Furthermore, because the project's operational emissions of NO_X would not exceed the NO_X threshold, Alternative B would not affect TRPA's attainment designation for atmospheric deposition. Long-term operational emissions under Alternative B would not violate an air quality standard, contribute substantially to an existing or projected air quality violation, expose sensitive receptors to substantial pollutant concentrations, or conflict with or obstruct implementation of the applicable air quality plan. This impact would be **less than significant.**

Mitigation Measures

No mitigation is required.

IMPACT 5.7.B-3 Long-Term Operational (Local) Mobile-Source Carbon Monoxide Emissions. *Long-term operational (local) mobile-source CO emissions under Alternative B would not violate an air quality standard (i.e., 8-hour TRPA standard of 6 ppm), contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. This impact would be* ***less than significant****.*

As with Alternative A, no signalized intersections would operate at LOS E or F under existing plus Alternative B project conditions. Thus, long-term operational (local) mobile-source CO emissions under Alternative B would not violate an air quality standard (i.e., 8-hour TRPA standard of 6 ppm), contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. This impact would be **less than significant.**

Mitigation Measures

No mitigation is required.

Table 5.7-8
Summary of Modeled Long-Term Operational (Regional) Emissions under Alternative B

Source-Type	lb/day				
	ROG	NO_X	PM_{10}	CO	SO_X
SUMMER					
Stationary Source[1]	-	-	-	-	-
Area Source[2]	0.1	-	-	0.1	-
Mobile Source[3]	0.1	0.1	0.1	1.2	-
Total	0.2	0.1	0.1	1.3	-
WINTER					
Stationary Source[1]	-	0.1	-	-	-
Area Source[2]	0.1	-	-	-	-
Mobile Source[3]	0.1	0.2	0.1	1.5	-
Total	0.2	0.3	0.1	1.5	-
THRESHOLDS					
Mass Emissions[4]	82.0	82.0	82.0	—	—
TRPA (stationary sources only)[5]	125.7	24.2	22.0	220.5	13.2

[1] Includes natural gas usage (e.g., from water heaters and central furnaces) and fireplaces.
[2] Area-source emissions include emissions from landscaping, application of architectural coatings, and consumer products, and are estimated based on default model settings, except an emission factor of 0.0013 pounds per square foot was used to reflect the project's use of low VOC content architectural coatings.
[3] Mobile-source emissions were estimated based on default model settings and trip generation rates and trip lengths obtained from the traffic analysis prepared for this project under buildout conditions for 2010.
[4] Mass Emission Threshold applies to the sum of stationary, area, and mobile sources for NO_X only.
[5] TRPA Thresholds apply to the stationary-source emissions only.
Source: Modeling conducted by EDAW 2006

IMPACT 5.7.B-4 Odor Emissions. *Because implementation of Alternative B would result in similar types of proposed uses on the same project site as Alternative A, this impact would be the same as Impact 5.7.A-4. Neither construction nor operation of Alternative B would create objectionable odors affecting a substantial number of people. This impact would be considered* ***less than significant.***

Mitigation Measures

No mitigation is required.

IMPACT 5.7.B-5 Hazardous Air Pollutant Emissions. *Because implementation of Alternative B would result in similar types of proposed uses and on the same project site as Alternative A, this impact would be the same as Impact 5.7.A-5. Neither construction nor operation of Alternative B would result in the exposure of sensitive receptors to substantial HAP emissions. This impact would be* ***less than significant.***

Mitigation Measures

No mitigation is required.

ALTERNATIVE C – TWO MULTIFAMILY COMPLEXES

IMPACT 5.7.C-1 Short-Term Construction-Generated Criteria Air Pollutant and Precursor Emissions. *Unmitigated, daily NO_X emissions would exceed the significance threshold of 82 lb/day, construction-generated criteria air pollutant and precursor emissions under Alternative C could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of the LTAB with respect to the TRPA standards. This would be a* ***significant impact.***

Short-term construction emissions of ROG, NO_X, and PM_{10} under Alternative C would be substantially similar to those of Alternative A and were also modeled using the URBEMIS 2002 Version 8.7 computer program. The modeled maximum daily construction emissions are summarized in Table 5.7-9 and described in more detail below and in Appendix D.

Table 5.7-9
Summary of Modeled Worst-Case Daily Short-Term Construction-Generated Emissions under Alternative C [1]

Source	lb/day		
	ROG	NO_X	PM_{10}
Initial Site Preparation (Demolition & Grading) Phase[1]			
Demolition (Summer 2007)			
Fugitive Dust	-	-	1.7
Off-Road Diesel	12.7	85.7	3.5
On-Road Diesel	1.3	15.7	0.4
Worker Commute	0.2	0.2	-
Maximum Daily Total, Unmitigated	**14.2**	**101.6**	5.6
Site Grading (Fall 2007-Spring 2008)			
Fugitive Dust	-	-	47.0
Off-Road Diesel	7.8	51.1	2.0
On-Road Diesel	-	-	-
Worker Commute	-	-	-
Maximum Daily Total, Unmitigated	7.8	51.1	**49.0**
Building Construction Phase (Summer 2008-Fall 2011)[2]			
Building Subphase[2]			
Off-Road Diesel	9.3	60.5	2.3
Worker Commute	0.3	0.2	-
Maximum Daily Total, Unmitigated	9.6	60.7	2.3
Asphalt Paving Subphase[2]			
Off-Gassing	0.2	-	-
Off-Road Diesel	2.0	11.6	0.3
On-Road Diesel	-	0.2	-
Worker Commute	-	-	-
Maximum Daily Total, Unmitigated	2.2	11.8	0.3
Architectural Coating Subphase[2]			
Off-Gassing	4.8	-	-
Worker Commute	0.2	0.1	-
Maximum Daily Total, Unmitigated	5.0	0.1	-

[1] Modeled emissions from demolition were based on the following assumptions from URBEMIS2002 Version 8.7.0 default model settings, EMFAC 2002 emission factors, and information in the Project Description,: duration of 2.6 months starting summer 2007, total demolition volume of 150,000 cubic feet (4,000 cubic feet/day), on-road truck travel of 222 miles to remove material, and use of 2 off-highway trucks, 2 tractors/loaders/backhoes, and 2 other pieces 8 hours per day. Modeled emissions from site grading were based on the following assumptions from URBEMIS2002 Version 8.7.0 default model settings or information in the Project Description: duration of 5.2 months, use of 0.5 excavator, 0.5 grader, 1 off-highway truck, 0.5 tractor/loader/backhoe, and 1 other piece, total area of 19.63, and a maximum daily disturbed area of 4.9 acres. Fractional equipment input is allowed by the model and more accurately reflects resultant emissions. The on-site construction equipment was determined based on the project description, and the maximum daily area actively disturbed on the project site. Hours of equipment operation per day assumes compliance with TRPA Code Section 62.4.A and TRPA's exemption for construction noise between 8:00 AM and 6:30 PM, as discussed in Chapter 5.8, Noise. Construction activities that involve soil disturbance must occur between May 1 and October 15 to comply with TRPA Code Section 62.4.A unless special approval has been granted by TRPA.

[2] Modeled emissions from building construction were based on the following assumptions from URBEMIS2002 Version 8.7.0 default model settings and information in the Project Description: duration of 44.2 months starting summer 2008, use of 0.5 crane, 1 off-highway truck, 0.5 rough terrain forklift, 0.5 rubber tired dozer, 0.5 rubber tired loader, and 1 other piece (0.5 grader, 0.5 paver, and 0.5 roller for asphalt subphase) 8 hours per day. An emission factor of 0.0013 pounds per square foot was used for architectural coatings emissions to reflect the expected use of low VOC content architectural coatings. Asphalt emissions are based on default emission factors and time duration of URBEMIS2002 to pave a total of 3.0 acres of area.

See Appendix D for detailed input parameters and modeling results.

Sources: Modeling performed by EDAW 2006.

Based on the modeling conducted, Alternative C construction would result in worst-case maximum daily emissions of approximately 14.2 lb/day of ROG, 101.6 lb/day of NO_X, and 49.0 lb/day of PM_{10}. Daily unmitigated construction-generated emissions would exceed the significance threshold of 82 lb/day for NO_X. Construction-generated emissions under Alternative C, specifically PM_{10}, could violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations, especially considering the nonattainment status of the LTAB with respect to the TRPA standards (e.g., 1-hour ozone and visibility-reducing particulate standards). This would be a **significant impact.**

Mitigation Measure 5.7.C-1. Reduce Construction-Generated Emissions of ROG, NO_X, and PM_{10}.

See Mitigation Measure 5.7.A-1 described above for Alternative A. The same mitigation measure would apply.

Implementation of Mitigation Measure 5.7.C-1 would reduce Impact 5.7.C-1, to a less-than-significant level.

IMPACT 5.7.C-2 Long-Term Operational (Regional) Criteria Air Pollutant and Precursor Emissions. *Because long-term operational emissions would not exceed TRPA's stationary source thresholds or the mass emission thresholds for NO_X, implementation of Alternative C would not violate an air quality standard, contribute substantially to an existing or projected air quality violation, expose sensitive receptors to substantial pollutant concentrations, or conflict with or obstruct implementation of the applicable air quality plan. This impact would be* less than significant.

The modeled maximum daily operational emissions under Alternative C would be substantially similar to those under Alternative A, and are summarized in Table 5.7-10, described in more detail below, and provided in Appendix D.

Table 5.7-10
Summary of Modeled Long-Term Operational (Regional) Emissions under Alternative C

Source-Type	lb/day				
	ROG	NO_X	PM_{10}	CO	SO_X
SUMMER					
Stationary Source[1]	0.1	1.2	-	0.5	-
Area Source[2]	7.9	-	-	0.6	-
Mobile Source[3]	4.5	5.7	4.9	48.5	-
Total	12.5	6.9	4.9	49.6	-
WINTER					
Stationary Source[1]	0.1	2.0	0.1	0.9	-
Area Source[2]	7.8	-	-	-	-
Mobile Source[3]	5.0	6.8	4.9	59.1	-
Total	12.9	8.8	5.0	60.0	-
THRESHOLDS					
Mass Emissions[4]	82.0	82.0	82.0	—	—
TRPA (stationary sources only)[5]	125.7	24.2	22.0	220.5	13.2

[1] Includes natural gas usage (e.g., from water heaters and central furnaces) and fireplaces.

[2] Area-source emissions include emissions from landscaping, application of architectural coatings, and consumer products, and are estimated based on default model settings, except an emission factor of 0.0013 pounds per square foot was used to reflect the project's use of low VOC content architectural coatings.

[3] Mobile-source emissions were estimated based on default model settings and trip generation rates and trip lengths obtained from the traffic analysis prepared for this project under buildout conditions for 2010.

[4] Mass Emission Threshold applies to the sum of stationary, area, and mobile sources for NO_X only.

[5] TRPA Thresholds apply to the stationary-source emissions only.

Source: Modeling conducted by EDAW 2006

Regional stationary-, area-, and mobile-source emissions under Alternative C were estimated based on proposed land use (two multifamily complexes), the change in trip generation from the traffic analysis prepared for this project in Section 5.6, "Transportation and Parking" (e.g., 890 daily vehicle trip ends for the proposed uses only), and default model setting for 2010 conditions. The modeled maximum daily operational emissions under Alternative C are summarized in Table 5.7-10 and described in more detail below and in Appendix D.

Based on the modeling conducted, project operations would result in worst-case maximum daily emissions of approximately 12.9 lb/day of ROG, 8.8 lb/day of NO_X, 5.0 lb/day of PM_{10}, 60.0 lb/day of CO, and a negligible amount (less than 0.1 lb/day) of SO_X, which would not exceed any of the applicable thresholds as shown in Table 5.7-8. Because the significance thresholds approximately correlate with reductions from heavy-duty vehicles and land use project emission reduction requirements in the SIP, project implementation would not conflict with any air quality planning efforts. Also, because the project's operational emissions of NO_X would not exceed the NO_X threshold, Alternative C would not affect TRPA's attainment designation for atmospheric deposition. Therefore, long-term operational emissions under Alternative A would not violate an air quality standard, contribute substantially to an existing or projected air quality violation, expose sensitive receptors to substantial pollutant concentrations, or conflict with or obstruct implementation of the applicable air quality plan. This impact would be **less than significant.**

Mitigation Measures

No mitigation is required.

IMPACT 5.7.C-3 Long-Term Operational (Local) Mobile-Source Carbon Monoxide Emissions. *Long-term operational (local) mobile-source CO emissions under Alternative C would not violate an air quality standard (i.e., 8-hour TRPA standard of 6 ppm), contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. This impact would be* ***less than significant.***

As with Alternative A, no signalized intersections would operate at LOS E or F under existing plus Alternative C project conditions. Thus, long-term operational (local) mobile-source CO emissions under Alternative C would not violate an air quality standard (i.e., 8-hour TRPA standard of 6 ppm), contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

IMPACT 5.7.C-4 Odor Emissions. *Because implementation of Alternative C would result in the same type of proposed uses on the same project site as Alternative A, this impact would be the same as Impact 5.7.A-4. Neither construction nor operation of Alternative C would create objectionable odors affecting a substantial number of people. This impact would be* ***less than significant.***

Mitigation Measures

No mitigation is required.

IMPACT 5.7.C-5 Hazardous Air Pollutant Emissions. *Because implementation of Alternative C would result in the same type of proposed uses and on the same project site as Alternative A, this impact would be the same as Impact 5.7.A-5. Neither construction nor operation of Alternative C would result in the exposure of sensitive receptors to substantial HAP emissions. This impact would be* ***less than significant.***

Mitigation Measures

No mitigation is required.

ALTERNATIVE D – NO PROJECT – JERE WILLIAMS PLAN

Under Alternative D, the Tahoe Shores Mobile Home Park would remain in operation and existing site conditions would remain the same, with minor maintenance and improvements implemented as needed. The minor improvements would not require substantial construction or excavation. All air quality impacts associated with implementation of Alternative D would be **less than significant.**

ALTERNATIVE E – NO PROJECT ALTERNATIVE – MANUFACTURED HOMES

Under Alternative E, the Tahoe Shores Mobile Home Park would remain in operation and existing site conditions would remain the same; and the site would be temporarily closed, the existing mobile homes would be cleared, and basic site improvements would be completed. Implementation of temporary and permanent BMPs and utility improvements would include no more than 3 cubic yards of grading. Therefore, all air quality impacts associated with implementation of Alternative E would be **less than significant**.