Table 4.2-1: Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	National Standard	Most Relevant Effects
Ozone	1 Hour	0.09 ppm	—	(a) Pulmonary function decrements and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) Vegetation damage; (f) Property damage
	8 Hour	0.070 ppm	0.08 ppm	
Carbon Monoxide (CO)	1 Hour	20 ppm	35 ppm	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
	8 Hour	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm*	—	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration
	Mean	0.030 ppm*	0.053 ppm	
Sulfur Dioxide (SO_2)	1 Hour	0.25 ppm	—	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
	24 Hour	0.04 ppm	0.14 ppm	
	Mean	—	0.030 ppm	
Particulate Matter (PM_{10})	24 hour	50 $\mu g/m^3$	150 $\mu g/m^3$	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; (c) Increased risk of premature death from heart or lung diseases in the elderly
	Mean	20 $\mu g/m^3$	—	
Particulate Matter ($PM_{2.5}$)	24 Hour	—	35 $\mu g/m^3$	
	Mean	12 $\mu g/m^3$	15 $\mu g/m^3$	
Sulfates	24 Hour	25 $\mu g/m^3$	—	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead	30-day	1.5 $\mu g/m^3$	—	(a) Learning disabilities; (b) Impairment of blood formation and nerve conduction
	Quarter	—	1.5 $\mu g/m^3$	

Abbreviations:
ppm = parts per million $\mu g/m^3$ = micrograms per cubic meter
Mean = Annual Arithmetic Mean 30-day = 30-day average Quarter = Calendar quarter

* The nitrogen dioxide ambient air quality standard was amended on February 22, 2007. These changes become effective after regulatory changes are submitted and approved by the Office of Administrative Law, expected in 2007.
Source: South Coast Air Quality Management District, 2007 AQMP. CARB, Ambient Air Quality Standards, 2007.

Regulatory Setting

In order to determine the significance of air quality impacts that would result from project implementation, those impacts, along with existing air quality levels, must be compared to ambient air quality standards. These standards represent the levels of air quality considered safe, with an adequate margin of safety to protect the public health and welfare.

South Coast Air Quality Management District (SCAQMD)

The air pollution control agency for the South Coast Air Basin (Basin) is the SCAQMD. SCAQMD is responsible for controlling emissions primarily from stationary sources, and maintains air quality monitoring stations throughout the Basin. SCAQMD, in coordination with the Southern California Association of Governments, is also responsible for developing, updating, and implementing the Air Quality Management Plan (AQMP) for the Basin. An AQMP is a plan prepared by an air pollution control district for a county or region designated as a nonattainment area for bringing the area into compliance with the requirements of the national and/or California ambient air quality standards. The term "nonattainment area" is used to refer to an air basin where ambient air quality standards are exceeded. In conjunction with CARB and Southern California Association of Governments (SCAG), SCAQMD prepared the 2007 revisions to its AQMP.

The 2007 AQMP employs up-to-date science and analytical tools and incorporates a comprehensive strategy aimed at controlling pollution from all sources, including stationary sources, on-road and off-road mobile sources, and area sources.

The 2007 AQMP demonstrates attainment with the federal 8-hour ozone standard and for $PM_{2.5}$, replaces the 2003 attainment demonstration for the federal CO standard and maintenance plan for CO for the future; and updates the maintenance plan for the federal NO_2 standard that the Basin has met since 1992.

The 2007 AQMP also addresses several state and federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2007 AQMP is consistent with and builds upon the approaches taken in the 2003 and 1997 AQMP and the 1999 Amendments to the SCAB SIP for the attainment of the federal ozone air quality standard.

Each revision of the AQMP represents a snapshot in time, based on the best available information. Generally, the 2007 AQMP is very similar in structure to the 2003 AQMP, the 1997 AQMP, and the 1999 Amendments to the SIP, but like all new editions it includes significant enhancements. The key updates incorporated in the 2007 AQMP are summarized as follows:

- Revised emissions inventory projections using 2002 as the base year, the CARB on-road motor vehicle emissions model EMFAC2007, and SCAG 2004 Regional Transportation Plan (RTP) forecast assumptions;

- Revised control strategy that updates remaining control measures from the 2003 AQMP, 1997/1999 SIP, and incorporation of new control measures toward attainment of the federal 8-hour ozone and $PM_{2.5}$ standards based on current technology assessments;
- Reliance on updated modeling tools for attainment demonstration relative to ozone,
- PM_{10} and $PM_{2.5}$; and
- Attainment demonstration of the federal 8-hour ozone and $PM_{2.5}$ standards.

The 2007 AQMP employs up-to-date science and analytical tools and incorporates a comprehensive strategy aimed at controlling pollution from all sources, including stationary sources, on-road and off-road mobile sources, and area sources. While many technical tasks are still underway to complete the Plan revision, there is sufficient information to begin framing policy discussions on clean air strategies. Hence, the Draft Plan has been prepared and is being released for early public review and participation.

The 2007 AQMP proposes attainment demonstration of the federal $PM_{2.5}$ standards through a more focused control of SO_x, directly emitted $PM_{2.5}$, and NO_x supplemented with volatile organic compound (VOC) by 2014. The 8-hour ozone control strategy builds upon the $PM_{2.5}$ strategy, augmented with additional VOC reductions to meet the standard by 2020. An extended attainment date (i.e., additional three years) is allowed under the Clean Air Act if a "bump-up" request is made by the state showing the need for such extension.

The 2007 AQMP proposes policies and measures currently contemplated by responsible agencies to achieve federal standards for healthful air quality in the Basin. The 2007 AQMP also addresses several federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools.

Local Government

Jurisdiction over the Proposed Alternative Project resides in San Bernardino County. The County of San Bernardino adopted a General Plan in 2007. The General Plan contains the goals, policies, and implementing actions for a variety of issues including natural and man-made hazards and natural and man-made resources; sets the framework for decision-making regarding the County's long-term development and utilization of resources; provides the data and analyses to support that decision-making framework; provides the rules by which land can be developed (what, where, and under what conditions); provides a consensus vision of what the citizens and Board of Supervisors want for the County's future; and establishes the operating rules for achieving that vision. Listed below are policies and programs contained in the General Plan that are pertinent to the protection of air quality.

Land Use Element

- **LU 8.1** – Potentially polluting, hazardous, and other health risk facilities should be located no closer than one-quarter mile to a sensitive receptor and vice versa.
- **LU 8.2** – Review development proposals to minimize impacts, such as air emissions, on sensitive receptors.
- **LU 9.2** – Discourage leap-frog development and urban sprawl by restricting the extension or creation of new urban services or special districts to areas that cannot be sustained in a fiscally responsible manner.

Circulation and Infrastructure Element

- **CI 3.1** – Encourage the reduction of automobile usage through various incentive programs.
- **CI 4.2** – To reduce the dependence on the automobile for local trips, integrate transportation and land use planning at the community and regional levels by promoting transit-oriented development (TOD), where appropriate and feasible.
- **CI 6.1** – Require safe and efficient pedestrian and bicycle facilities in residential, commercial, industrial, and institutional developments to facilitate access to public and private facilities and to reduce vehicular trips. Install bicycle lanes and sidewalks on existing and future roadways, where appropriate and as funding is available.
- **CI 6.3** – Retain residual road dedication that may result whenever a road is changed to a lower highway designation, thus reducing the required right-of-way, until it is determined that such dedication will not be needed for bicycle, pedestrian or equestrian trail purposes.
- **M/CI 1.10** – Support the development of park and ride transit service in the mountain communities.
- **M/CI 1.11** – When population and residential densities permit or warrant, develop shuttle services from residential neighborhoods to recreational areas and major commercial centers.

Housing Element

- **H 2.5** – Continue to evaluate residential developments with emphasis on energy-efficient design and siting options that are responsive to local climatic conditions and applicable laws.
- **H 2.10** – Encourage the use of energy conservation features in residential construction, remodeling, and existing homes.

Conservation Element

- **CO 4.1** – Because developments can add to the wind hazard (due to increased dust, the removal of wind breaks, and other factors), the County will require either as mitigation measures in the appropriate environmental analysis required by the County for the development proposal; or as conditions of approval if no environmental document is required; and that developments in areas identified as susceptible to wind hazards to address site-specific analysis of:

a.) Grading restrictions and/or controls on the basis of soil types, topography, or season.
b.) Landscaping methods, plant varieties, and scheduling to maximize successful revegetation.
c.) Dust-control measures during grading, heavy truck travel, and other dust generating activities.

- **CO 4.2** – Coordinate air quality improvement technologies with the SCAQMD and the Mojave Air Quality Management District (MAQMD) to improve air quality through reductions in pollutants from the region.
- **CO 4.3** – The County will continue to ensure through coordination and cooperation with all airport operators a diverse and efficient ground and air transportation system, which generates the minimum feasible pollutants.
- **CO 4.4** – Because congestion resulting from growth is expected to result in a significant increase in the air quality degradation, the County may manage growth by insuring the timely provision of infrastructure to serve new development.
- **CO 4.5** – Reduce emissions through reduced energy consumption.
- **CO 4.6** – Provide incentives such as preferential parking for alternative-fuel vehicles (e.g., Compressed Natural Gas (CNG) or hydrogen (H_2).
- **CO 4.8** – Replace existing vehicles in the County fleet with the cleanest vehicles commercially available that are cost-effective and meet the vehicle use needs.
- **CO 4.9** – Manage the County's transportation fleet fueling standards to improve the number of alternative fuel vehicles in the County fleet.
- **CO 4.10** – Support the development of alternative fuel infrastructure that is publicly accessible.
- **CO 4.11** – Establish programs for priority or free parking on County streets or in County parking lots for alternative fuel vehicles.
- **CO 4.12** – Provide incentives to promote siting or use of clean air technologies (e.g., fuel cell technologies, renewable energy sources, UV coatings, and hydrogen fuel).
- **CO 8.6** – Fossil fuels combustion contributes to poor air quality. Therefore, alternative energy production and conservation will be required, as follows:

a) New developments will be encouraged to incorporate the most energy-efficient technologies that reduce energy waste by weatherization, insulation, efficient appliances, solar energy systems, reduced energy demand, efficient space cooling and heating, water heating, and electricity generation.
b) All new subdivisions for which a tentative map is required will provide, to the extent feasible, for future natural heating or cooling opportunities in the subdivision. This can be accomplished by design of lot size and configuration for heating or cooling from solar exposure or shade and breezes, respectively.

c) For all new divisions of land for which a tentative map is required, a condition of approval will be the dedication of easements, for the purpose of assuring solar access, across adjacent parcels or units.

- **CO 8.8** – Promote energy-efficient design features, including appropriate site orientation, use of lighter color roofing and building materials, and use of deciduous shade trees and windbreak trees to reduce fuel consumption for heating and cooling.
- **CO 8.9** – Promote the use of automated time clocks or occupant sensors to control central heating and air conditioning.

4.2.3 - Air Pollutants

Criteria air pollutants are those pollutants that have been determined by EPA or CARB to have detrimental health effects for "sensitive" populations such as people with asthma, children, and older adults and for which health criteria have been established. Criteria air pollutants have historically been reported in three main categories – stationary sources, areawide sources, and mobile sources. Stationary sources are those that generate emissions from a stationary location, usually associated with manufacturing and industrial sources. Areawide sources are sources of emissions which are widely distributed and produce many emissions, individually small but collectively significant, such as consumer products, fireplaces, and solvent evaporation. Mobile source emissions are associated with motor vehicles and include on-road and off-road sources. On-road sources are emissions from vehicles, trucks, motorcycles, buses, etc. Off-road sources include equipment and vehicles in the following sectors: recreational, construction, mining, industrial, lawn and garden, farm, airport service, and rail. A brief summary of most recognized pollutants of concern follows:

- Carbon Monoxide (CO): A colorless, odorless toxic gas produced by incomplete combustion of carbon-containing fuels (e.g., gasoline or diesel fuel). CO levels tend to be highest during the winter months, when the meteorological conditions favor the accumulation of the pollutants.
- Ozone: A photochemical oxidant that is formed when reactive organic gases and oxides of nitrogen (both byproducts of internal combustion engines) react in the presence of ultraviolet sunlight. Ozone is a very energetic combination of three oxygen atoms that, when it comes into contact with a surface, releases its force as chemical energy. When this happens to biological systems (i.e., the respiratory tract and plants), this energy can cause damage to sensitive tissues.
- Oxides of nitrogen (NO_x): NO_x is a mixture of nitric oxide and nitrogen dioxide in the atmosphere. Nitric oxide is from a byproduct of fuel combustion and quickly reacts with oxygen to form nitrogen dioxide. NO_x emissions contribute to the formation of ozone and particulate matter. The only form of NO_x that exists at a level to cause public health concerns is nitrogen dioxide.
- Sulfur dioxide and sulfates: In California, sulfur is emitted during the combustion of petroleum-derived fuels (i.e., gasoline and diesel fuel) that contain sulfur. During combustion,

sulfur is oxidized to sulfur dioxide (a colorless pungent gas). The sulfur dioxide is then converted to sulfate compounds in the atmosphere.

- Lead: Lead is a heavy metal that can accumulate in bone, soft tissue, and blood and can damage the kidneys, liver, and nervous system, and can result in learning disabilities, seizures, and death. Lead concentrations once exceeded the state and national air quality standards by a wide margin, but have not exceeded state or national air quality standards in the area for at least 10 years. Lead is no longer an additive in gasoline, which is the main reason the concentration of lead in the air is low.
- Suspended PM_{10} and $PM_{2.5}$: Particulate matter is a mixture of small particles that consists of dry solid fragments, droplets of water, or solid cores with liquid coatings. The particles vary in shape, size, and composition. PM_{10} refers to particulate matter that is 10 microns or less in diameter (1 micron is one-millionth of a meter). $PM_{2.5}$ refers to particulate matter that is 2.5 microns or less in diameter. Sources include road dust, diesel soot, erosion of soil, combustion particles (ashes and soot), and tire and brake abrasion.
- Volatile organic compounds (VOCs): VOCs are organic compounds that readily evaporate. Reactive organic gases (ROGs) consist of nonmethane and oxygenated hydrocarbons. Although all VOCs are not necessarily ROGs, the terms are often interchanged. There are no state or national ambient air quality standards for VOCs; however, they are regulated because they are involved in chemical reactions that contribute to the formation of ozone. In addition, some hydrocarbon components classified as VOCs (i.e., benzene) are thought or known to be hazardous. Sources of VOCs include adhesives, solvents, paints, cooking, fuel, and combustion. VOC can interfere with oxygen uptake and can cause coughing, sneezing, headaches, weakness, laryngitis, and bronchitis.
- Diesel particulate matter (DPM): A subset of particulate matter that is a matter of concern is DPM. Diesel exhaust is a mixture of many particles and gases that is produced when an engine burns diesel fuel. Many compounds found in diesel exhaust are carcinogenic, including sixteen that are classified as possibly carcinogenic by the International Agency for Research on Cancer. DPM includes the particle-phase particles in diesel exhaust. Components of DPM include elemental and organic carbon. Elemental carbon is carbon that has had hydrogen taken from it. Organic carbon contains molecules containing carbon and hydrogen, and can also contain oxygen, sulfur, and nitrogen. Exposure to diesel exhaust can cause immediate health effects. Some of the health effects include eye, nose, and throat irritation as well as cough, nausea, and phlegm. The elderly, children, people with allergies, and those with asthma, emphysema, and chronic heart and lung disease are more susceptible to the effects of diesel exhaust is a mixture of many particles and gases that is produced when an engine burns diesel fuel. Many compounds found in diesel exhaust are carcinogenic. DPM includes the particle-phase particles in diesel exhaust. Some of the health effects of DPM include eye, nose, and throat irritation as well as cough, nausea, and phlegm.

- GHGs: Certain atmospheric gases act as an insulating blanket for solar energy to keep the global average temperature in a suitable range, and help to regulate the climate by absorbing infrared radiation in the atmosphere and allowing incoming solar radiation to pass through the atmosphere. These gases are called "greenhouse gases" (GHGs) because they trap heat like the glass walls of a greenhouse. Some GHGs include water vapor, methane, carbon dioxide (CO_2), nitrous oxide, ozone, halogenated fluorocarbons, perfluorinated carbons, and hydrofluorocarbons. The most common GHG is CO_2, which constitutes approximately 84 percent of all GHG emissions in California (CEC, 2006).
    - Water vapor (H_20) is the most abundant, important, and variable GHG in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered to be a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. The feedback loop in which water is involved is critically important to projecting future climate change. As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to 'hold' more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop." The extent to which this positive feedback loop will continue is unknown as there are also dynamics that hold the positive feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it will eventually also condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the Earth's surface and heat it up). There are no health effects from water vapor itself; however, when some pollutants come in contact with water vapor, they can dissolve and the water vapor can then act as a pollutant-carrying agent. The main source of water vapor is evaporation from the oceans (approximately 85 percent). Other sources include: evaporation from other water bodies, sublimation (change from solid to gas) from sea ice and snow, and transpiration from plant leaves.
    - Carbon dioxide (CO_2) is an odorless and colorless GHG. Outdoor levels of carbon dioxide are not high enough to result in negative health effects. Carbon dioxide is emitted from natural and manmade sources. Natural sources include the decomposition of dead organic matter; respiration of bacteria, plants, animals and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources include the burning of coal, oil, natural gas, and wood. Carbon dioxide is naturally removed from the air by photosynthesis, dissolution into ocean water, transfer to soils and ice caps, and chemical weathering of carbonate rocks. Since the industrial revolution began in the mid-1700s, the sort of human activity that increases GHG emissions has increased dramatically in

scale and distribution. Data from the past 50 years suggests a corollary increase in levels and concentrations. As an example, prior to the industrial revolution, CO concentrations were fairly stable at 280 parts per million (ppm). Today, they are around 370 ppm, an increase of more than 30 percent. Left unchecked, the concentration of carbon dioxide in the atmosphere is projected to increase to a minimum of 540 ppm by 2100 as a direct result of anthropogenic sources.

- Methane (CH_4) is an extremely effective absorber of radiation, though its atmospheric concentration is less than carbon dioxide and its lifetime in the atmosphere is brief (10-12 years), compared to other GHGs. No health effects are known to occur from exposure to methane. Methane has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of methane. Other anthropocentric sources include fossil fuel combustion and biomass burning.
- Nitrous oxide (N_2O), also known as laughing gas, is a colorless GHG. Nitrous oxide can cause dizziness, euphoria, and sometimes slight hallucinations. In small doses, it is considered harmless. However, in some cases, heavy and extended use can cause Olney's Lesions (brain damage). Concentrations of nitrous oxide also began to rise at the beginning of the industrial revolution. In 1998, the global concentration was 314 parts per billion (ppb). Nitrous oxide is produced by microbial processes in soil and water, including those reactions, which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used as an aerosol spray propellant (i.e., in whipped cream bottles). It is also used in potato chip bags to keep chips fresh. It is used in rocket engines and in race cars. Nitrous oxide can be transported into the stratosphere, be deposited on the earth's surface, and be converted to other compounds by chemical reaction.
- Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in methane or ethane (C_2H_6) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble and chemically unreactive in the troposphere (the level of air at the earth's surface). CFCs are no longer being used; therefore, it is not likely that health effects would be experienced. Nonetheless, in confined indoor locations, working with CFC-113 or other CFCs is thought to result in death by cardiac arrhythmia (heart frequency too high or too low) or asphyxiation. CFCs have no natural source, but were first synthesized in 1928. They were used for refrigerants, aerosol propellants and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and was extremely successful, so much so that levels of the major CFCs are now remaining steady

or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.

- Hydrofluorocarbons (HFCs) are synthetic, man-made chemicals that are used as a substitute for CFCs. Out of all the GHGs, they are one of three groups with the highest global warming potential. The HFCs with the largest measured atmospheric abundances are (in order), HFC-23 (CHF_3), HFC-134a (CF_3CH_2F), and HFC-152a (CH_3CHF_2). Prior to 1990, the only significant emissions were of HFC-23. HFC-134a emissions are increasing due to its use as a refrigerant. The U.S. EPA estimates that concentrations of HFC-23 and HFC-134a are now about 10 parts per trillion (ppt) each; and that concentrations of HFC-152a are about 1 ppt. No health effects are known to result from exposure to HFCs, which are manmade for applications such as automobile air conditioners and refrigerants.
- Perfluorocarbons (PFCs) have stable molecular structures and do not break down though chemical processes in the lower atmosphere. High-energy ultraviolet rays, which occur about 60 kilometers above Earth's surface, are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6). The U.S. EPA estimates that concentrations of CF_4 in the atmosphere are over 70 ppt. No health effects are known to result from exposure to PFCs. The two main sources of PFCs are primary aluminum production and semiconductor manufacture.

- Visibility reducing particles: Visibility reducing particles are suspended particulate matter. Visibility is the distance through the air that can be seen without the use of instrumental assistance. The 8-hour state standard is the extinction coefficient of 0.23 kilometer – visibility of 10 miles or more due to particles when relative humidity is less than 70 percent. Visibility reducing particles are not assessed in this report; however, particulate matter is assessed.

- Vinyl chloride: Vinyl chloride is a chlorinated hydrocarbon and a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride is a known carcinogen. The 24-hour state standard for vinyl chloride is 0.01 ppm. The proposed project is not expected to generate or be exposed to vinyl chloride because its uses do not include the chemicals processes that create this pollutant. Therefore, it is not assessed in this report.

- Hydrogen sulfide: Hydrogen sulfide is a flammable, colorless, poisonous gas that smells like rotten eggs. It can irritate the eyes and respiratory tract and cause symptoms like headache, nausea, vomiting, and cough. The 1-hour state standard for hydrogen sulfide is 0.03 ppm. Sources include the combustion of sulfur containing fuels (oil and coal) and organic matter that undergoes putrefaction. It is used in the production of heavy water for nuclear reactors, the manufacture of chemicals, in metallurgy, and as an analytical reagent. The proposed project is

not expected to cause exposure to hydrogen sulfide because it will not generate hydrogen sulfide in any substantial quantity. Therefore, hydrogen sulfide is not assessed in this analysis.

4.2.4 - Physical Setting

Local Climate

Ambient Air Quality Standards

The national and state standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. The health effects of a pollutant are a factor of the dose of the pollutant, the length of exposure, the pollutant's properties, and the body's ability to excrete the pollutant. Table 4.2-1 refers to the current national and state standards, as well as the relevant health effects.

Local Climate

As previously stated, the Proposed Alternative Project is located near the community of Fawnskin, on the north shore of Big Bear Lake in San Bernardino County. This region is located within the Basin. Regional and local air quality is impacted by dominant airflows, topography, atmospheric inversions, location, season, and time of day.

The presence and intensity of sunlight are necessary prerequisites for the formation of ozone. Under the influence of the ultraviolet radiation of sunlight, certain primary pollutants (mainly VOC and NO_X) react to form a secondary pollutant – ozone. Since this process is time dependent, ozone can be formed many miles downwind from the emission sources. Because of the prevailing daytime winds and time-delayed nature of ozone, concentrations are highest in the inland areas of Southern California. However, a majority of the smog in the Big Bear Valley is created by the transport of pollutants from Los Angeles, Riverside, and San Bernardino counties, as opposed to local sources.

The climate in the Basin is characterized by moderate temperatures and comfortable humidity with precipitation generally limited to a few storms during the winter season (November through April). The average annual temperature varies little throughout the Basin, averaging 75 degrees Fahrenheit (ºF). More specifically, the Community of Fawnskin enjoys an Alpine climate. The Community is located in an area that intercepts water-laden clouds that can result in rainfall and/or snow. Precipitation at Big Bear Lake's National Weather Service station from 1960 to 2006 averaged about 18 inches for the six-month period from November to April and the average snowfall for January, February, and March is above 14 inches per month. The area's watershed is mountainous with steep upper slopes leading to a mildly sloping valley. The coolest month of the year is January, with a mean monthly temperature of 33.7 ºF. The warmest month is July, with a mean monthly temperature of 63.9 ºF.

Dominant airflows provide the driving mechanism for transport and dispersion of air pollution. The mountains surrounding the Los Angeles region form natural horizontal barriers to the dispersion of air contaminants. Air pollution created in the coastal areas and around the Los Angeles area is

transported inland until it reaches the mountains where the combination of mountains and inversion layers generally prevent further dispersion. The area in which the Community of Fawnskin is located offers approximately 300 days/year of clear skies and sunshine and is above the typical inversion altitudes of the Los Angeles area; however, it is still susceptible to air inversions. This traps a layer of stagnant air near the ground where it is further loaded with pollutants. These inversions cause haziness, which is caused by moisture, suspended dust, and a variety of chemical aerosols emitted by trucks, automobiles, wood stoves, and other sources.

Local Air Quality

The local air quality can be evaluated by reviewing relevant air pollution concentrations near the project area. SCAQMD has divided the basin into 38 Source Receptor Areas (SRA) for evaluation purposes and operates monitoring stations within each one. Existing levels of ambient air quality and historical trends and projections of air quality in the project area are best documented from measurements made near the project site. SCAQMD operates an air monitoring station in Big Bear City, approximately 4 miles east of the project, but it only measures $PM_{2.5}$. The nearest site that measures PM_{10}, which is operated by the MDAQMD, is located approximately 10 miles north of the project in Lucerne Valley at the Middle School. The nearest ozone monitor is operated by the SCAQMD located at Lake Gregory – Crestline, approximately 20 miles west of the project site. Table 4.2-2 summarizes 2004-2006 published monitoring data for the nearest monitors. The SCAQMD and CARB have decided that the only pollutant of concern enough to be monitored in the area where the project is located is $PM_{2.5}$. PM_{10} and ozone monitoring information are supplied for informational purposes but may not represent accurate localized conditions of the project site.

Table 4.2-2: San Bernardino Mtn. Air Quality Monitoring Summary

Air Pollutant, Averaging Time (Units)	2004	2005	2006
Ozone - Crestline			
Max 1 Hour (ppm)	0.163	0.182	0.164
Days > CAAQS (0.09 ppm)	75	80	73
Days > NAAQS (0.12 ppm)*	9	18	–
Max 8 Hour (ppm)	0.145	0.145	0.142
Days > CAAQS (0.070 ppm)*	–	119	103
Days > NAAQS (0.08 ppm)	66	69	59
Particulate Matter (PM_{10}) – Lucerne Valley			
Mean ($\mu g/m^3$)	18.1	19.1	23.0
24 Hour ($\mu g/m^3$)	47	57	50
Days > CAAQS (50 $\mu g/m^3$)	0	1	0
Days > NAAQS (150 $\mu g/m^3$)	0	0	0
Particulate Matter ($PM_{2.5}$) – Big Bear City			
Mean ($\mu g/m^3$)	NA	NA	NA
24 Hour ($\mu g/m^3$)	28.6	38.7	40.0
Days > NAAQS (35 $\mu g/m^3$)	0	0	0

Table 4.2-2 (cont.): San Bernardino Mtn. Air Quality Monitoring Summary

Air Pollutant, Averaging Time (Units)	2004	2005	2006
Abbreviations: > = exceed ppm = parts per million $\mu g/m^3$ = micrograms per cubic meter NA = not available max = maximum Mean = Annual Arithmetic Mean CAAQS = California Ambient Air Quality Standard NAAQS = National Ambient Air Quality Standard Note: NAAQS for 1-hour ozone and the CAAQS for 8-hour are presented for the years the standards were in effect Source: CARB Air Quality Data/Statistics/Top 4 Summary, 6/1/2007.			

Local Sources of Air Pollutants

The project area is primarily a resort area with recreational activities for all four seasons. The primary source of local pollution is vehicular in both summer and winter, with the addition of wood smoke during the winter. Recreational boating is also a CO and VOC source.

Rules Applicable to the Proposed Alternative Project

The rules and regulations that apply to this project include but are not limited to the following:

- SCAQMD Rule 403, which governs emissions of fugitive dust. Compliance with this rule is achieved through application of standard best management practices in construction and operation activities, such as application of water or chemical stabilizers to disturbed soils, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 miles per hour (mph), sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph and establishing a permanent, stabilizing ground cover on finished sites.

- SCAQMD Rule 1108 governs the sale, use, and manufacturing of asphalt and limits the ROG content in asphalt used in the South Coast Air Basin. Although this rule does not directly apply to the Proposed Alternative Project, it does dictate the ROG content of asphalt available for use during the construction.

- SCAQMD Rule 1113 governs the sale, use, and manufacturing of architectural coating and limits the ROG content in paints and paint solvents. Although this rule does not directly apply to the Proposed Alternative Project, it does dictate the ROG content of paints available for use during the construction of buildings.

- SCAQMD Rule 402 governs the discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

Alternate Forms of Transportation

The Mountain Area Regional Transit Authority (MARTA) is the primary public transportation provider on the mountaintop, providing local and off-the-mountain bus service to the Big Bear Valley, Running Springs, Lake Arrowhead, Crestline, and San Bernardino. The agency operates both fixed route and demand-response services (Dial-A-Ride). MARTA has connecting services to Metrolink, Omnitrans, and Greyhound.

Attainment Status

Air basins where ambient air quality standards are exceeded are referred to as "nonattainment" areas. If standards are met, the area is designated as an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." National nonattainment areas are classified as severe, serious, or moderate as a function of deviation from standards.

The current attainment designations for the project area are shown in Table 4.2-3. The "attainment year" is the goal of the existing 2003 AQMP and 2007 AQMP. The basin is in state non-attainment for ozone, PM_{10}, and $PM_{2.5}$, and is in federal nonattainment for ozone, CO, PM_{10}, and $PM_{2.5}$. Note that CO is still classified as "serious nonattainment" for the federal CO standard even though the attainment date has passed and the basin met the CO standard by December 2002. In 2004, SCAQMD requested that EPA re-designate the basin as in attainment with the CO ambient air quality standard, but EPA has not made a formal action to do so. The 2003 AQMP served as a maintenance plan for CO, and the 2007 AQMP is an update to that maintenance plan.

Table 4.2-3: SCAB Attainment Status

Pollutant	State Status	National Status [Attainment Year]
Ozone (1-hour)	Non-attainment	Not Subject
Ozone (8-hour)	Non-attainment	Severe Non-attainment [2021]
Carbon Monoxide	Attainment	Serious Non-attainment [2000]
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
PM_{10}	Non-attainment	Serious Non-attainment [2006]
$PM_{2.5}$	Non-attainment	Non-attainment [2015]
Source: State Status from CARB, 2006. National Status from U.S. EPA, 2007.		

4.2.5 - Global Climate Change

Gases that trap heat in the atmosphere are called GHGs. The greenhouse effect is analogous to the way a greenhouse retains heat, and raises the temperature of the earth's surface by about 60 ºF. With the natural greenhouse effect, the average temperature of the earth is about 45 ºF; without it, the earth

would be about -15 ºF. Global warming is an average rise in the earth's temperature, which can cause changes in climate. It is normal for the earth's temperature to fluctuate over extended periods of time. Over the past one hundred years, however, the earth's average global temperature has generally increased by 1 ºF. Scientists refer to the global warming context of the past century as the "enhanced greenhouse effect" to distinguish it from the natural greenhouse effect. While the increase in temperature is known as "global warming", the resulting change in weather patterns is known as "global climate change." Global climate change is evidenced in changes to wind patterns, storms, precipitation, and air temperature. Historical records have shown that temperature changes have occurred in the past, such as during previous ice ages, but some data indicates that the current temperature record differs from previous climate changes in rate and magnitude.

Common GHGs include water vapor, carbon dioxide, methane, nitrous oxides, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Both natural processes and human activities emit GHGs. However, it is believed that emissions from human activities, such as electricity production and vehicle exhaust, have elevated the concentration of these gases in the atmosphere, leading to a trend of unnatural warming of the Earth's climate, known as global warming or climate change.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. It concluded that a stabilization of GHGs at 400-450 ppm carbon dioxide-equivalent concentration is required to keep global mean warming below 2 degrees Celsius, which is assumed to be necessary to avoid dangerous climate change (IPCC 2001).

The State of California is a substantial contributor of global GHGs as it is the second largest contributor in the U.S. and the sixteenth largest in the world (CEC 2006). The California Energy Commission calculated that in 2004 California produced 492 million metric tons of carbon dioxide equivalent (CEC 2006).

An individual project cannot generate enough GHG emissions to effect a discernible change in global climate. However, the Proposed Alternative Project may participate in this potential impact by its incremental contribution combined with the cumulative increase of all other sources of GHGs, which when taken together constitute potential influences on global climate change. Because these changes may have serious environmental consequences, this section will evaluate the potential for the Proposed Alternative Project to have a significant effect upon California's environment as a result of its potential contribution to the enhanced greenhouse effect.

Federal Regulation

In the past, the U.S. EPA has not regulated GHGs under the Clean Air Act because it asserted that the Act did not authorize it to issue mandatory regulations to address global climate change and that such regulation would be unwise without an unequivocally established causal link between GHGs and the

increase in global surface air temperatures. However, the U.S. Supreme Court recently held that the EPA must consider regulation of motor-vehicle GHG emissions. In *Massachusetts v. Environmental Protection Agency et al.,* twelve states and cities, including California, together with several environmental organizations, sued to require the EPA to regulate GHGs as pollutants under the Clean Air Act (127 S. Ct. 1438 (2007). The Court ruled that GHGs fit within the Clean Air Act's definition of a pollutant and that the EPA did not have a valid rationale for not regulating GHGs. Despite the Court's ruling, to date the EPA has not promulgated regulations on GHG emissions; however, Congress is currently working on legislation that would address GHGs.

State Regulation

There has been significant legislative activity regarding global climate change and GHGs in California. California Assembly Bill 1493 (Pavley), enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Regulations adopted by the ARB would apply to 2009 and later model year vehicles. The ARB estimates that the regulation would reduce climate change emissions from the light-duty passenger vehicle fleet by an estimated 18 percent in 2020 and by 27 percent in 2030.

Executive Order S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S 3-05, the following GHG emission reduction targets:

1. By 2010, reduce GHG emissions to 2000 levels;
2. By 2020, reduce GHG emissions to 1990 levels; and
3. By 2050, reduce GHG emissions to 80 percent below 1990 levels.

Climate Action Team

To meet these targets, the Governor directed the Secretary of the Cal EPA to lead a Climate Action Team (CAT) made up of representatives from the Business, Transportation and Housing Agency; the Department of Food and Agriculture; the Resources Agency; the Air Resources Board; the Energy Commission; and the Public Utilities Commission. The CAT's Report to the Governor in 2006 (2006 CAT Report) contains recommendations and strategies to help ensure the targets in Executive Order S-3-05 are met.

AB 32

In 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. In adopting this legislation (commonly known as AB 32), the State initiated a long-term program for the development of GHG emissions reduction measures. AB 32 focuses on reducing GHG emissions in California and requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. GHGs, as defined under AB 32, include carbon dioxide, methane, nitrous oxide, HFCs, PFCs, and SF_6. The ARB is the state agency charged with monitoring and regulating sources of emissions of GHGs that cause global warming in order to reduce emissions of

GHGs. AB 32 required ARB to determine what, the statewide GHG emissions level was in 1990 and approve a statewide GHG emissions limit by January 1, 2008, so it may be applied to the 2020 benchmark. Currently, GHG levels have been estimated at 600 MMTs of CO_2 equivalent, while 1990 levels have been estimated to be 427 MMTs. Accordingly, emissions need to be reduced by 173 MMTs by 2020.

On December 11, 2008, CARB adopted a scoping plan to reduce GHG emissions to 1990 levels. The Scoping Plan's recommendations for reducing GHG emissions to 1990 levels by 2020 include emission reduction measures, including a cap-and-trade program linked to Western Climate Initiative partner jurisdictions, green building strategies, recycling and waste-related measures, as well as Voluntary Early Actions and Reductions. CARB has until January 1, 2011, to adopt the necessary regulations to implement that plan. Implementation of individual measures must begin no later than January 1, 2012, so that the emissions reduction target can be fully achieved by 2020. CARB is currently drafting regulations to implement the plan.

SB 97

AB 32, however, did not amend CEQA or establish regulatory standards to be applied to new development or environmental review of projects within the state. Accordingly, the Legislature adopted Senate Bill 97 (SB 97) in August 2007. SB 97 requires the California Office of Planning and Research (OPR) to prepare and transmit new CEQA guidelines for the mitigation of GHG emissions or the effects of GHG emissions to the Resources Agency by July 1, 2009. These guidelines for mitigation must address, but are not limited to, GHG emissions and effects associated with transportation and energy consumption. Following receipt of these guidelines, the Resources Agency must certify and adopt the guidelines prepared by OPR by January 1, 2010.

OPR

OPR released preliminary draft CEQA Guideline amendments for GHG emissions on January 8, 2009, and submitted its final proposed guidelines to the Secretary for Natural Resources on April 13, 2009. Of note, the final proposed guidelines state that a lead agency shall have discretion to determine whether to use a quantitative model or methodology, or in the alternative, rely on a qualitative analysis or performance based standards. Proposed CEQA Guideline § 15064.4(a) "A lead agency shall have discretion to determine, in the context of a particular project, whether to: (1) use a model or methodology to quantify GHG emissions resulting from a project, and which methodology to use; or (2) rely on a qualitative analysis or performance based standards."

In its draft CEQA Guideline amendments, OPR does not identify a threshold of significance for GHG emissions, nor does it prescribe assessment methodologies or specific mitigation measures. Instead, it calls for a "good-faith effort, based on available information, to describe, calculate or estimate the amount of GHG emissions resulting from a project." The draft amendments encourage lead agencies to consider many factors in performing a CEQA analysis and preserve lead agencies' discretion to make their own determinations based upon substantial evidence. The draft amendments also

encourage public agencies to make use of programmatic mitigation plans and programs from which to tier when they perform individual project analyses.

The Natural Resources Agency will begin a formal rulemaking process to certify and adopt the amendments as part of the state regulations implementing CEQA. Consistent with SB 97, the Natural Resources Agency should complete this process by January 2010. Until these Guidelines are approved, OPR's June 2008 Technical Advisory provides interim advice to lead agencies regarding the analysis of GHG emissions in environmental documents. The Technical Advisory encourages lead agencies to follow three basic steps: (1) identify and quantify the GHG emissions that could result from the proposed project; (2) analyze the effects of those emissions and determine whether the effect is significant, and (3) if the impact is significant, identify feasible mitigation measures or alternatives that will reduce the impact below a level of significance.

CARB's Preliminary Draft Staff Proposal for Interim Significance Thresholds

Although OPR was tasked with updating the CEQA guidelines for GHGs, OPR asked CARB in its Technical Advisory to recommend GHG-related CEQA significance thresholds to assist lead agencies in their significance determination. CARB Staff released a draft proposal on October 24, 2008, with interim guidance on significance thresholds. In its proposal, Staff noted that non-zero thresholds can be supported by substantial evidence, but thresholds should nonetheless be sufficiently stringent to meet the State's interim (2020) and long-term (2050) emissions reduction targets. CARB staff believes that zero thresholds are not mandated in light of fact that: (1) some level of emissions in the near-term and mid-century is still consistent with climate stabilization, and (2) current and anticipated regulations apart from CEQA will proliferate and increasingly will reduce GHG contributions of past, present and future projects. The CARB proposal takes different approaches for different sectors – (1) industrial projects and (2) residential and commercial projects.

CARB Staff has proposed a numerical threshold for the GHG emissions of industrial projects of 7,000 metric tons per year, which is intended to require some form of mitigation from 90 percent of all projects; however, no numerical threshold has been proposed for commercial (and residential) projects. For residential and commercial projects, CARB Staff recommends that if a project complies with a previously approved plan that addresses GHG emissions, it would not have a cumulatively considerable incremental contribution to impacts identified in the previously approved plan, and has a number of specific attributes related to meeting and monitoring GHG targets, then it will not be considered to have significant GHG emissions. Alternatively, if those standards cannot be met, Staff recommends a threshold based on implementation of performance standards, or equivalent mitigation measures, addressing energy use, transportation, water use, waste and construction.

The draft proposal has been very controversial and Staff will be bringing a revised draft to the Board in the future. A key preliminary conclusion from the draft thresholds, however, is that CARB Staff, in setting a numerical threshold for industrial projects and suggesting performance standards, does not believe a "zero threshold" is mandated by CEQA. Similarly, SCAQMD staff, in proposing interim

industrial thresholds, explicitly stated in a December 5, 2008, report that a zero threshold would not be feasible to implement.

SCAQMD

The SCAQMD is currently in the process of developing a threshold of significance for GHG emissions. Although the SCAQMD threshold would technically only apply to projects for which SCAQMD was acting as a CEQA lead agency, the proposed threshold methodology is nonetheless instructive, and is based on a "Tiered Decision Tree" approach based on the concept of business-as-usual (BAU). This approach contains a series of tiers to evaluate a project, starting with exemptions (Tier 1), continuing through consistency with regional plan GHG budgets (Tier 2), quantitative screening level threshold (Tier 3), performance standards (Tier 4), to application of emission offsets (Tier 5).

The SCAQMD's GHG CEQA Significance Thresholds Working Group released a draft threshold methodology in August 2008 (SCAQMD 2008b), and the most recent screening level proposed by staff was 6,500 metric tons of CO_2 equivalent per year (6,500 MT/year CO2). This screening level was derived using the SCAQMD's existing NO_x operational threshold as a basis. The daily NO_x operational significance threshold, 55 pounds per day was annualized, which results in 10 tons of NO_x per year. Projects with GHG emissions less than the screening level are considered to be small projects, that is, they would not likely emit amounts of GHGs to be considered significant pursuant to CEQA.

Senate Bill 375

In September of 2008, the California legislature adopted SB 375, legislation which: (1) relaxes CEQA requirements for some housing projects that meet goals for reducing greenhouse-gas emissions and (2) requires the regional governing bodies in each of the state's major metropolitan areas to adopt, as part of their regional transportation plan, "sustainable community strategies" that will meet the region's target for reducing GHG emissions. SB 375 creates incentives for implementing the sustainable community strategies by allocating federal transportation funds only to projects that are consistent with the emissions reductions. SB 375 also directs CARB to develop regional GHG emission reduction targets to be achieved from the automobile and light truck sectors for 2020 and 2035.

CARB will determine the level of emissions produced by cars and light trucks, including S.U.V.s, in each of California's 17 metropolitan planning areas. Emissions-reduction goals for 2020 and 2035 would be assigned to each area. CARB appointed a Regional Targets Advisory Committee (RTAC) on January 23, 2009 to provide recommendations on factors to consider and methodologies to use in this target setting process. RTAC must provide recommendations to CARB by September 30, 2009, whereupon CARB must propose draft targets by June 10, 2010 and adopt final targets by September 30, 2010.

Local governments would then devise strategies for housing development, road building and other land uses to shorten travel distances, reduce driving and meet the new targets. If regions develop these integrated land use, housing, and transportation plans, residential projects that conform to the sustainable community strategy (and therefore contribute to GHG reduction) can have a more streamlined environmental review process.

California Air Pollution Control Officers Association White Paper

The California Air Pollution Control Officers Association (CAPCOA) released a white paper in January 2008 entitled "CEQA & Climate Change," which discussed three alternative thresholds, including a no significance threshold, a zero increase threshold, and a non-zero threshold, as well as multiple analysis options. The white paper is a resource guide developed to support local governments, and details tools for GHG assessment, emission models, and mitigation strategies to reduce potentially significant GHG emissions from a project.

Local Public Agencies

The California Attorney General sued San Bernardino County based on the County's General Plan Update EIR. That case resulted in a settlement agreement between the County and the California Attorney General's office, filed with the Central District Superior Court of San Bernardino County on August 28, 2007. Under the settlement agreement, the County agreed to prepare an amendment to the General Plan to add a policy that describes the County's goal of reducing GHG attributable to the County's discretionary land use decisions and internal government operations. The County also agreed to prepare a GHG Emissions Reduction Plan. The settlement agreement details the contents of the GHG Emission Reduction Plan, including GHG inventories and emission reduction targets. Both the General Plan amendment and the GHG Emission Reduction Plan should be completed within 30 months of the execution of the settlement agreement. The settlement agreement also contains provisions for diesel engine exhaust control measures to be implemented by the County.

Greenhouse Gases

Potential Environmental Effects

Worldwide, average temperatures are likely to increase by 1.8 degrees Celsius (°C) to 4°C, or approximately 3 °F to 7 °F, by the end of the 21st Century (IPCC 2007a). However, a global temperature increase does not translate to a uniform increase in temperature in all locations on the earth. Regional climate changes are dependant on multiple variables, such as topography. One region of the Earth may experience increased temperature, increased incidents of drought and similar warming effects, whereas another region may experience a relative cooling. According to the IPCC's Working Group II Report, Climate Change impacts to North America may include (IPCC 2007b): diminishing snowpack; increasing evaporation; exacerbated shoreline erosion; exacerbated inundation from sea level rising; increased risk and frequency of wildfire; increased risk of insect outbreaks; increased experiences of heat waves; and, rearrangement of ecosystems, as species and ecosystem zones shift northward and to higher elevations.

For California, Climate Change has the potential to incur/exacerbate the following environmental impacts (CAT 2006):

- Increased frequency, duration, and intensity of conditions conducive to air pollution formation (particularly ozone);
- Reduced precipitation;
- Changes to precipitation and runoff patterns;
- Reduced snowfall (precipitation occurring as rain instead of snow);
- Earlier snowmelt;
- Decreased snowpack;
- Increased agricultural demand for water;
- Intrusion of seawater into coastal aquifers;
- Increased agricultural growing season;
- Increased growth rates of weeds, insect pests and pathogens;
- Inundation of low-lying coastal areas by sea level rise;
- Increased incidents and severity of wildfire events; and,
- Expansion of the range and increased frequency of pest outbreaks.

Although certain environmental effects are widely accepted to be a potential hazard to certain locations, such as rising sea level for low-laying coastal areas, it is currently infeasible to predict all environmental effects of climate change on any one location.

4.2.6 - Thresholds of Significance

The following significance thresholds were derived from Appendix G of the CEQA Guidelines. A significant impact would occur if the proposed project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or protected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Contribute to a significant global climate change impact by conflicting with GHG emission reduction strategies.
- Expose sensitive receptors to substantial pollutant concentrations;
- Create objectionable odors affecting a substantial number of people; or
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone).

While the formulation of the thresholds of significance is within the purview of the lead agency pursuant to §15064(b) of the State CEQA Guidelines, the SCAQMD recommends that the following quantitative air pollution thresholds be used by the lead agencies in determining whether the proposed project could result in a significant impact. If the lead agency finds that a proposed project has the potential to exceed these air pollution thresholds, the project should be considered significant. These thresholds have been defined by SCAQMD for the SCAB based on scientific data the SCAQMD has obtained and factual data within the federal and state Clean Air Acts. Since the Proposed Alternative Project is located within the SCAB and current air quality in the project area is typical of the air basin as a whole, and because the SCAQMD is the regulatory agency that has authority over air quality regulations and has special knowledge in this regard, the thresholds set by the SCAQMD are appropriate to use to determine the significance of air quality impacts resulting from the Proposed Alternative Project. Each of these threshold factors is discussed below.

4.2.7 - Regional Significance Thresholds

The following regional significance thresholds have been established by SCAQMD. Projects within the Basin region with construction- or operation-related emissions in excess of any of the thresholds presented in Table 4.2-4 are considered significant:

Table 4.2-4: SCAQMD Regional Thresholds

Pollutant	Construction (pounds per day)	Operation (pounds per day)
Oxides of Nitrogen (NO_X)	100	55
Volatile Organic Compounds (VOC)	75	55
Particulate Matter (PM_{10})	150	150
Particulate Matter ($PM_{2.5}$)	55	55
Oxides of Sulfur (SO_X)	150	150
Carbon Monoxide (CO)	550	550
Source: South Coast Air Quality Management District, 2006.		

4.2.8 - Local Significance Thresholds

Construction

The SCAQMD Governing Board adopted a methodology for calculating localized air quality impacts through localized significance thresholds (LSTs), which is consistent with SCAQMD's Environmental Justice Enhancement Initiative I-4. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable state or national ambient air quality standard. The LSTs are developed based on the ambient concentrations of that pollutant for each source receptor area and are applicable to NO_X, CO, PM_{10}, and $PM_{2.5}$.

The Proposed Alternative Project is located in Source Receptor Area 38. Even though the Proposed Alternative Project's construction activity is limited to the construction of the interior streets and infrastructure and no grading of individual lots is proposed, in order to evaluate worst-case conditions, it is assumed that construction on the 50 lots will occur over a 12 month period and that a maximum of 4 acres would be disturbed per day. Using the 2003-2005 look-up tables provided in the LST Guidelines for a conservative 5 acres per day disturbed at a receptor distance of 25 meters, Table 4.2-5 shows the appropriate LSTs for construction activity.

Table 4.2-5: SCAQMD Localized Thresholds for Construction

Pollutant	Localized Significance Threshold (lbs/d)
Nitrogen Dioxide (NO_2)	439
Carbon Monoxide (CO)	1,363
Particulate Matter (PM_{10})	14
Particulate Matter ($PM_{2.5}$)	9
Source: South Coast Air Quality Management District, 2003 and 2006.	

LSTs for operational emissions only apply to onsite sources. Since the primary source of emissions for this project is associated with offsite vehicle trips, an LST analysis of long-term emissions is not required.

Nuisance

The SCAQMD has a regulation that governs the discharge from any source such quantities of air contaminants, which cause a nuisance or annoyance to any considerable number of persons or to the public. Creating the potential for a violation of the SCAQMD's Nuisance Rule (Rule 402) would create a potentially significant effect.

4.2.9 - Global Warming Project Level Thresholds

There are several unique challenges to analyzing global warming under CEQA, largely because of its "global" nature. Typical CEQA analyses address local actions that have local – or, at most, regional – impacts, whereas global warming presents the considerable challenge of analyzing the relationship between local and global activities and the resulting potential, if any, for local and/or global environmental impacts. Most environmental analyses examine the "project-specific" impacts that a particular project is likely to generate. With regard to global warming, however, it is generally accepted that the magnitude of global warming effects is so substantial and the contribution of an individual project to global warming is so extremely minuscule that direct significant adverse impacts (albeit not necessarily cumulative significant adverse impacts) would be highly unlikely.

The issue of GHG emissions and global climate change (GCC) is also fundamentally different from any other areas of air quality impact analysis, which are all linked to some region or area in which the

impact is significant. Instead, a global climate change analysis must be conducted on a global level, rather than the typical local or regional setting, and requires consideration of not only emissions from the project under consideration, but also the extent of the displacement, translocation, and redistribution of emissions. In the usual context, where air quality is linked to a particular location or area, it is appropriate to consider the creation of new emissions in that area to be an environmental impact whether or not the emissions are truly "new" emissions to the overall globe. In fact, the approval of a new developmental plan or project does not necessarily create new automobile drivers- the primary source of a land use project's emissions. Rather, new land use projects merely redistribute existing mobile emissions; accordingly, the use of models that measure overall emissions increases without accounting for existing emissions will substantially overstate the impact of the development project on global warming. Overstating the impacts can lead to a misallocation of resources in seeking solutions to GHG emissions and climate change-related problems. This makes an accurate analysis of GHG emissions substantially different from other air quality impacts, where the "addition" of redistributed emissions to a new locale can make a substantial difference to overall air quality.

Generally, the evaluation of an impact under CEQA requires measuring data from a project against a "threshold of significance" (see CEQA Guidelines §15064.7). For global warming, there is not, at this time, an established "threshold of significance" by which to measure an impact. CEQA also requires projects to be evaluated for consistency with "applicable general plans and regional plans" (see CEQA Guidelines §15125(e)). Such plans would include, for example, "the applicable air quality attainment or maintenance plan." These plans involve legislative or regulatory programs applicable to all projects within the region. They establish standards that are independent of the impact analysis described in the CEQA Guidelines (see provisions beginning with Section 15126). The program for GHG emission reductions and maintenance, which ultimately is intended to result from AB 32, would likely constitute such a regional plan when adopted. However, under AB 32, that program does not yet exist and is not expected to be in place for several years. Therefore, there is no local, regional or statewide plan regulating global warming by which the Proposed Alternative Project can be measured. As stated above, OPR asked CARB to recommend a method for setting thresholds of significance. CARB is in the process of establishing GHG thresholds of significance, but they have not yet been adopted at this time.

Notwithstanding these analytical challenges, CEQA Guidelines §15002(a)(1) states that one of the basic purposes of CEQA is to "[i]nform governmental decision makers and the public about the potential, significant environmental effects of proposed activities." Therefore, even if not "typical" under CEQA, this evaluation of the Proposed Alternative Project's potential for contribution to global climate change will analyze that potential in a manner and to an extent reasonably consistent with the policy underpinnings of CEQA.

This analysis is the result of the County's thorough investigation of the impact of the Proposed Alternative Project on global climate change, including a review of Executive Order S-305, AB 32 and the legislative intent behind AB 32, as well as extensive review of scientific literature regarding global

warming and global climate change. Every effort has been made to maximize the disclosure of information to the public, fairly present the potential for significant adverse effects as a result of global warming, and identify the potential to minimize the potential global warming impacts of the Proposed Alternative Project.

It must be noted that there is great disagreement within the scientific community on any given approach. The County cannot, and need not, under CEQA, review every report from an expert or agency, especially since new reports are released on an almost daily basis. The County has, however, reviewed multiple key advisories, comment letters, and white papers from experts, agencies, and groups such as the Climate Action Team, the California Attorney General, the CAPCOA, CARB, the Center for Biological Diversity, the Sierra Club, and the California Chapter of the American Planning Association. Some of these reports urge "zero emission" thresholds, while others advocate against them. Others evaluate multiple thresholds, such as CAPCOA's January 2008 white paper, which analyzes: (1) CEQA with no GHG thresholds; (2) CEQA with a GHG threshold of zero; and (3) CEQA with non-zero thresholds. As stated in the CAPCOA white paper, "[m]any legal and policy questions remain unsettled, including the requirements of CEQA in the context of GHG emissions. This paper is provided as a resource for local policy and decision makers to enable them to make the best decisions they can in the face of incomplete information during a period of change."

After reviewing much of the relevant literature, the County has determined that OPR, as the agency charged with drafting CEQA thresholds, provides the best available guidance.

Given OPR's current reluctance to create a numerical threshold, the County has also not adopted a numerical threshold. OPR's Draft CEQA Guideline Amendments for GHG Emissions state that a lead agency may consider the following three (3) issues in assessing the significance of impacts from GHG emissions:

(1) The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting;

(2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and

(3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

The Draft CEQA Guidelines Amendments also state that a lead agency should make a good-faith effort, based on available information, to describe, calculate or estimate the amount of GHG emissions associated with a project, including emissions associated with energy consumption and vehicular traffic. Because the methodologies for performing this assessment are anticipated to evolve over time, a lead agency shall have discretion to determine, in the context of a particular project, whether to use a

model or methodology to quantify GHG emissions or to rely on qualitative or other performance based standards for estimating the significance of GHG emissions. (See Draft CEQA Guidelines Amendments § 15064.4(b).)

CEQA defines a "significant effect on the environment" as a substantial, or potentially substantial, adverse change in the environment (Public Resources Code §21068). With respect to global climate change, no one project can individually create a direct impact on what is a global problem (i.e., no project will, by itself, raise the temperature of the planet).

However, a project may be "cumulatively considerable," meaning "that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of current projects, and the effects of probable future projects" (CEQA Guidelines §15065(a)(3)). OPR's Draft Guideline Amendments add that a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program, such as a climate action plan, sustainable community strategy, or statewide plan of mitigation for GHG emissions. (See Draft CEQA Guidelines Amendments § 15064(h)(3)).

Based on: (a) the Legislature's mandate in AB 32; (b) the continued advancements, yet substantial present-day unknowns, in global warming science; (c) the proposed CEQA guidelines prepared pursuant to SB 97; and (d) several published GHG emissions reduction strategies in the scientific literature, the following threshold will be used for the purposes of analyzing the Proposed Alternative Project's potential to contribute to climate change:

- *Whether the Proposed Alternative Project would conflict with the attainment of the State's goals of reducing GHG emissions as dictated by AB 32*. The Proposed Alternative Project will be deemed to have a less-than-significant impact on global climate change on a cumulative basis if (1) it does not result in GHG emissions that are considerable when compared to the existing environmental setting, and (2) it is consistent with emissions reduction strategies included in local, regional, or statewide planning documents and from reputable published sources such as the California Climate Action Team's (CAT) Report to the Governor, CARB Early Action Measures, and OPR's June 19, 2008 Technical Advisory Memorandum.

4.2.10 - Cumulative Impact Thresholds

Section 15130(b) of the CEQA Guidelines states the following:

> The following elements are necessary to an adequate discussion of significant cumulative impacts: Either a list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or a summary of projections contained in an adopted general plan or related planning

document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area-wide conditions contributing to the cumulative impact.

In accordance with CEQA Guidelines 15130(b), this analysis of cumulative impacts incorporates a summary of projections. The following tiered approach is to assess cumulative air quality impacts. This approach includes the analysis of the following:

- Regional analysis of project air pollutants; and
- Project consistency with existing air quality plans.

4.2.11 - Assessment of the Cumulative Health Effects of the Pollutants

Project Impact Analysis

The following paragraphs analyze the potential impacts of the Proposed Alternative Project on the air quality in the area surrounding the project site. The expected emissions from the construction and operation of the Proposed Alternative Project are calculated as a necessary requisite for assessing the regulatory significance of Proposed Alternative Project emissions on a local and regional level. The paragraphs contain an analysis of the criteria in the CEQA Guidelines regarding air quality as well as an assessment of project conformity with the General Plan.

The Original Proposed Project included 92 residential lots and a 103-slip marina on the 62.43-acre project site. The Proposed Alternative Project reduces the density and intensity of the project with 50 residential lots, a 55-slip marina, and approximately 5.73 acres of dedicated open space in Open Space/Conservation easements.

Short Term Impacts

Short-term impacts will include fugitive dust and other particulate matter, as well as exhaust emissions generated by earthmoving activities and operation of grading equipment during site preparation. Construction emissions are caused by onsite or offsite activities. Onsite emissions principally consist of exhaust emissions (NO_X, CO, VOC, PM_{10}, and $PM_{2.5}$) from heavy-duty construction equipment, motor vehicle operation, and fugitive dust (mainly PM_{10}) from disturbed soil. Offsite emissions are caused by motor vehicle exhaust from delivery vehicles, as well as worker traffic, but also include road dust (PM_{10}). Major construction-related activities include the following:

- Grading/clearing, including the excavation;
- Excavation and earth moving for infrastructure construction of the utilities, both on and offsite, and dwelling unit foundations and footings;
- Building construction;
- Asphalt paving of access roads throughout the development; and
- Application of architectural coatings for things such as dwelling stucco and interior painting.

Construction equipment such as scrapers, bulldozers, forklifts, backhoes, water trucks, and industrial saws are expected to be used on the project site and will result in exhaust emissions consisting of CO, NO_X, VOC, PM_{10}, and $PM_{2.5}$. During the finishing phase, paving operations and application of architectural coatings will release VOC emissions. Construction emission can vary substantially from day to day, depending on the level of activity, the specific type of operation, and prevailing weather conditions. For the purposes of determining worst-case emissions and including reasonably foreseeable results, this analysis assumes that only the area of the home site will be graded, with approximately 4 acres being the maximum acreage graded on any one day. Equipment usage was estimated using the Recommended Construction Fleet Calculator created for the Indirect Source Review Regulation (http://www.valleyair.org/ISR/ISRResources.htm). It was assumed that construction equipment would operate for 6 to 8 hours per day and the entire construction period would last for 12 months.

Table 4.2-6 summarizes these construction-related emissions (without mitigation). The emission estimates were derived from the description of the Proposed Alternative Project using the URBEMIS 2002 Version 8.7 emission model. The URBEMIS data files are provided in Appendix A to the Air Quality report.

Table 4.2-6: Short-Term Emissions (Unmitigated)

Source	Emissions (maximum pounds per day)						
	VOC	NO_X	CO	PM_{10} Exhaust	PM_{10} Dust	$PM_{2.5}$ Exhaust	$PM_{2.5}$ Dust
Site Grading	8.09	49.85	68.64	1.81	41.60	1.67	8.74
Building Construction	69.30	53.32	67.76	1.91	0.09	1.76	0.02
Maximum lbs/day	**69.30**	**53.32**	**68.64**	**43.54**		**10.49**	
Regional Threshold	75	100	550	150		55	
Significant Impact?	No	No	No	No		No	
Local Significant Threshold	NA	439	1,363	14		9	
Significant Impact?		No	No	**Yes**		**Yes**	

NA =Not applicable
Source: URBEMIS, MBA 2008.

The information shown in the above table indicates that the SCAQMD regional emission thresholds will not be exceeded by any pollutant, but the locally significant thresholds will be potentially exceeded due to PM_{10} and $PM_{2.5}$ emissions.

Level of Significance before Mitigation

Potentially Significant – Without mitigation, the short-term emissions are considered to have a significant local impact for particulate matter but a less than significant regional impact.

It is important to note that a previous analysis for the Original Proposed Project consisting of 95 total lots on this site had a significant and unavoidable impact to the short-term construction emissions of ROG and NO_X. A review of the analysis showed that the majority of the ROG emissions were assigned to architectural coatings off-gas. Used in the old analysis was the default emissions factor for architectural coating; however, that does not reflect the effect of the SCAQMD's Architectural Coatings Rule (Rule 1113). The majority of the NO_X emissions came from construction equipment exhaust. The updated URBEMIS version uses emission factors that are more up-to-date and more accurately reflect the current fleet of construction equipment. These analytical changes, in addition to the revision of the Proposed Alternative Project to decrease development density and intensity, eliminated the significant short-term air quality impacts identified in the 2005 Final EIR. Although the short-term air quality impact analysis indicates the Proposed Alternative Project will result in a potentially significant localized impact due to PM_{10} and $PM_{2.5}$ emissions, it must be noted that the 2005 Final EIR did not apply the localized significance thresholds in its analysis.

4.2.12 - Construction Mitigation

AQ-1 Prior to construction of the project, the project proponent will provide a Fugitive Dust Control Plan that will describe the application of standard best management practices (BMP) to control dust during construction. The Fugitive Dust Control Plan shall be submitted to the County and SCAQMD for approval and approved prior to construction. Best management practices will include, but not be limited to:

- For any earth moving which is more than 100 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction.
- For all disturbed surface areas (except completed grading areas), apply dust suppression in a sufficient quantity and frequency to maintain a stabilized surface; any areas which cannot be stabilized, as evidenced by wind driven dust, must have an application of water at least twice per day to at least 80 percent of the unstabilized area.
- For all inactive disturbed surface areas, apply water to at least 80 percent of all inactive disturbed surface areas on a daily basis when there is evidence of wind-driven fugitive dust, excluding any areas that are inaccessible due to excessive slope or other safety conditions.
- For all unpaved roads, water all roads used for any vehicular traffic once daily and restrict vehicle speed to 15 mph.
- For all open storage piles, apply water to at least 80 percent of the surface areas of all open storage piles on a daily basis when there is evidence of wind-driven fugitive dust.

AQ-2 To reduce emissions from the construction equipment within the project site, the construction contractor will:

- To the extent that equipment and technology is available and cost effective, the contractor shall use catalyst and filtration technologies.
- All diesel-fueled engines used in construction of the project shall use ultra-low sulfur diesel fuel containing no more than 15-ppm sulfur, or a suitable alternative fuel.
- All construction diesel engines, which have a rating of 50 hp or more, shall meet the Tier II California Emission Standards for off-road compression-ignition engines, unless certified by the contractor that such engine is not available for a particular use. In the event that a Tier II engine is not available, Tier I compliant or 1996 or newer engines will be used preferentially. Older engines will only be used if the contractor certifies that compliance is not feasible.
- Heavy-duty diesel equipment will be maintained in optimum running condition.

4.2.13 - Short-Term Construction Emissions after Mitigation

Using the URBEMIS model and applying construction mitigation, short-term emissions of PM_{10} and $PM_{2.5}$ after implementation of the above mitigation measures were estimated and are provided in Table 4.2-7. As shown in Table 4.2-7, short-term localized construction emissions are expected to be less than significant after application of mitigation measures.

Table 4.2-7: Short-term Emissions of PM_{10} & $PM_{2.5}$ (Mitigated)

Source	Emissions (maximum lbs/d)	
	PM_{10}	$PM_{2.5}$
Site Grading	6.57	1.64
Building Construction	6.59	1.65
Maximum lbs/day	**6.59**	**1.65**
Local Significant Threshold	14	9
Significant Impact?	No	No
Source: MBA 2008.		

Level of Significance after Mitigation

Less than significant.

Long-Term Impacts

Long-term emissions for the project site are considered for project build-out. Emission sources consist of mobile emissions and stationary emissions. Mobile emissions estimates are derived from motor vehicle traffic. Stationary emissions estimates are derived from the consumption of natural gas,

electricity and consumer products, as well as emissions resulting from landscape maintenance. Assumptions relevant to model input for the long-term emissions estimates are as follows:

- The project site is assumed to generate 479 average daily trips at buildout of the Proposed Alternative Project (2008);
- Natural gas consumption is based on residential land use;
- Landscape equipment emissions during the summer are based on default rates within the URBEMIS 2002 model for residential land uses at buildout year 2008; and
- Fireplace hearth emissions during the wintertime assume the conservative URBEMIS default that 35 percent of the units would have wood stoves, 10 percent would have wood fireplaces, and 55 percent would have natural gas fireplaces.

Since the proposed project is at an altitude of over 5,000 feet and basic exhaust emission rates are based on tests at CARB's Haagen-Smit Laboratory at an altitude of 300 feet, emission rates from vehicles in the vicinity of the project may not be accurately represented in the URBEMIS calculations. According to CARB's on-road motor vehicle emissions model methodology (CARB 2000), some older technology vehicles emit more VOC and CO emissions and fewer NO_X emissions when at higher altitudes. This is a special concern for vehicles operating above 5,000 feet elevation. At higher altitudes, the air pressure and air density is lower than that at sea level. Older technology vehicles, designed for operation at sea level, were not equipped with adaptive fuel controls to reduce the fuel flow for operation at high altitudes. Hence, older technology vehicles tended to run rich at higher altitudes. This increased VOC and CO emissions but suppressed NO_X formation due to the quenching effect of the excess fuel.

Therefore, CARB established correction factors of 1.3 for VOC, 1.9 for CO, and 0.6 for NO_X that are to be applied to the running exhaust and continuous starting emissions for operation above 5,000 feet. These correction factors are only applicable to older technology gasoline fueled vehicles. Newer technology vehicles have adaptive fuel controls that compensate for higher altitudes. CARB determined the correction factor would only apply to the Technology Groups listed in Table 4.2-8.

Table 4.2-8: Technology Groups with Altitude Correction Factors

Tech Group	Model Years	Technology Group Description
1	Pre-1975	With Secondary Air
2	Pre-1975	Without Secondary Air
3	1975-1982	No Catalyst
4	1975-1976	Oxidation Catalyst with Secondary Air
5	1975-1979	Oxidation Catalyst without Secondary Air
6	1980-1989	Oxidation Catalyst without Secondary Air
7	1977-1987	Oxidation Catalyst with Secondary Air

An analysis of EMFAC2007 for the Basin portion of San Bernardino County for the current year (2007), buildout year (2008), and long-term operations (2030) was conducted. Results of this analysis are presented in Appendix B to the Air Quality Analysis (see Appendix A of this Revised and Recirculated Draft EIR). The number of vehicles operating in these technology groups as a percentage of all vehicles was determined to be only 2.78 percent in 2007, 1.69 percent in 2008, and 0 percent in 2030. Therefore, it was determined that further application of correction factors would not be necessary due to the negligible effect on the total emissions.

An estimate of the daily total long-term project emissions is derived by combining both mobile and stationary emissions (natural gas consumption, consumer product consumption, hearth use, paint applications, and landscape maintenance). Using the model URBEMIS, total daily emissions were estimated for summer and winter. Table 4.2-9 shows long-term estimated daily total summer emissions and Table 4.2-10 shows winter emissions.

In addition, it can be assumed that the future residents would also have personal water craft for use on Big Bear Lake. An estimate of personal water craft emissions was made using the model used by CARB to estimate emissions from off-road motor vehicles (OFFROAD2007) for the year 2010, using San Bernardino County small recreational craft emissions only. The small recreational craft categories were used because Big Bear Municipal Water District Regulationsdoes not allow any craft larger than 26 feet in length on the lake. Total number of craft in San Bernardino County for 2010 is estimated at 22,449. Assuming that each household has one craft, the Alternative would generate 50 craft, which is 0.223 percent of the County's total. OFFROAD emissions are generated on an average yearly basis so Table 4.2-9 and Table 4.2-10 include the average pounds per day of emissions from portion of total emissions that would be generated by 50 watercraft.

Table 4.2-9: Long-Term Emissions (summer)

Pollution Source	Emissions (pounds per day)				
	VOC	NO_X	CO	PM_{10}	$PM_{2.5}$
Mobile Emissions	3.48	6.06	43.49	4.86	1.21
Natural Gas Consumption	0.05	0.63	0.27	NG	NG
Landscape Emissions	0.25	0.01	1.74	0.01	NG
Consumer Products	2.45	NG	NG	NG	NG
Architectural Coatings	1.70	NG	NG	NG	NG
Personal Water Craft	5.84	0.46	11.13	0.68	0.68
Combined Emissions Totals (lbs/day)	**13.77**	**7.16**	**56.63**	**5.55**	**1.89**
Regional Threshold	55	55	550	150	55
Exceed Threshold?	No	No	No	No	No

NG = negligible
Source: URBEMIS, MBA 2008.
1: Big Bear Municipal Water District webpage http://www.bbmwd.org/regulations.htm. Accessed September 20, 2007.

Sources for air quality impacts from the Proposed Alternative Project include particulate and gaseous emissions from construction activities, and are temporary. Some of these activities are controlled by SCAQMD permit conditions and by specified control measures in the District's Best Available Control Technology (BACT) guidelines, which are required before a permit to begin construction may be issued.

Table 4.2-10: Long-Term Emissions (winter)

Pollution Source	Emissions (pounds per day)				
	VOC	NO_X	CO	PM_{10}	$PM_{2.5}$
Mobile Emissions	4.23	7.23	52.66	4.86	1.21
Natural Gas Consumption	0.05	0.63	0.27	NG	NG
Hearth Emissions	28.38	0.98	51.91	7.74	7.12
Consumer Products	2.45	NG	NG	NG	NG
Architectural Coatings	1.70	NG	NG	NG	NG
Combined Emissions Totals (lbs/day)	**36.81**	**8.84**	**104.84**	**12.60**	**7.39**
Regional Threshold	55	55	550	150	55
Exceed Threshold?	No	No	No	No	No

NG = negligible
Source: URBEMIS, MBA 2008.

Level of Significance before Mitigation

Less than Significant – When emissions projections are compared with the SCAQMD suggested regional thresholds for significance, all long-term emissions are below the applicable thresholds.

It is important to note that a previous analysis documented in the 2005 Final EIR for a 92-lot subdivision on this site had a significant and unavoidable impact to the regional levels of ROG, CO, and PM_{10}. A review of the analysis showed that the majority of the emissions were assigned to wood fireplaces. The analysis used the URBEMIS model version available at the time (Version 7G), which has been determined to have had an error in calculating emissions from hearth activities. The emissions calculated for this report used the current version of URBEMIS (Version 8.7), which is considered more reliable.

CO Hotspots

CO is a localized problem requiring additional analysis beyond total project emissions quantification. Projects with sensitive receptors or projects that could negatively impact levels of service (LOS) of existing roads are required to use the University of California Davis, Institute of Transportation Studies document *Transportation Project-Level Carbon Monoxide Protocol (CO Protocol)* (UCD 1997) (hereafter referred to as the CO Protocol) to determine the potential to create a CO hot spot. A CO hot spot is a localized concentration of CO that is above the State or Federal 1-hour or 8-hour

ambient air standards. Localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles. The Proposed Alternative Project has the potential to negatively impact the LOS on adjacent roadways and, therefore, requires a CO hotspot analysis.

The significance of project-related CO impacts is generally based on guidance presented in the CO Protocol. This document presents a series of criteria that are used to determine the significance of impacts. The impact on CO is considered significant if the project will:

- Degrade operation of an intersection to level of service LOS E or F; or
- Substantially worsen an intersection already operating at LOS F.

For the purposes of determining potential impacts on CO concentrations, a screening procedure was developed to allow the conservative evaluation of CO concentrations without having to run computational models such as EMFAC and CALINE4. Screening procedures provide a relationship among CO concentrations and the most important parameters that affect those concentrations. The screening procedure is contained in the CO Protocol. The Protocol states that the determination of project-level CO impacts should be carried out according to a Local Analysis flow chart.

As presented in the Moon Camp Traffic Impact Analysis (TIA) conducted by Urban Crossroads (2007), affected intersections are projected to operate at a Level of Service "C" or better during peak hours with the improvements listed. According to Section 4.7.2 of the CO Protocol, if the project does not involve any intersections with an LOS "E" or "F," no further analysis is necessary.

However, since the TIA indicates that three of the study intersections are currently operating at a LOS F in 2010 with Proposed Alternative Project without improvements, there is no guarantee that the improvements proposed will actually be constructed within a reasonable time after development of the Proposed Alternative Project. Since these intersections may continue to operate in deficient conditions for some time after opening year of the Proposed Alternative Project, a detailed analysis was conducted on three intersections.

The CARB emission factor model, EMFAC2002, was used to estimate the emission factors for the year 2009. Additional assumptions include approach/departure speed - 5 miles per hour; travel speed - 25 miles per hour; temperature - 40 degrees Fahrenheit; season - winter; and geographical area - South Coast Air Basin.

Using the CALINE4 model, potential CO hotspots were analyzed at the intersections listed in Table 4.2-11. As shown in Table 4.2-11, the estimated 1-hour and 8-hour concentrations, in combination with background concentration, are below the State and Federal ambient air quality standards. No CO hotspots are anticipated as a result of traffic-generated emissions by the Proposed Alternative Project in combination with existing traffic. Therefore, the mobile related emissions are not anticipated to contribute substantially to an existing or projected air quality violation.