ATTACHMENT A - EXHIBIT 1 - A

Appendix D - Air Quality Impact Analysis

Wildomar Walmart

AIR QUALITY IMPACT ANALYSIS

CITY OF WILDOMAR

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APRIL 3, 2014

TABLE OF CONTENTS

APPENDICES

APPENDIX 3.1: CALEEMOD EMISSIONS MODEL OUTPUTS
APPENDIX 3.2: STATE/FEDERAL ATTAINMENT STATUS OF CRITERIA POLLUTANTS

LIST OF EXHIBITS

LIST OF TABLES

LIST OF ABBREVIATED TERMS

(1)	Reference
µg/m3	Microgram per Cubic Meter
AADT	Annual Average Daily Trips
AQIA	Air Quality Impact Analysis
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
BACM	Best Available Control Measures
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DPM	Diesel Particulate Matter
EPA	Environmental Protection Agency
HVAC	Heating Ventilation and Air Conditioning
LED	Light Emitting Diodes
LST	Localized Significance Threshold
NAAQS	National Ambient Air Quality Standards
NO2	Nitrogen Dioxide
NOx	Oxides of Nitrogen
Pb	Lead
PM10	Particulate Matter 10 microns in diameter or less
PM2.5	Particulate Matter 2.5 microns in diameter or less
PPM	Parts Per Million
Project	Wildomar Walmart
ROG	Reactive Organic Gases
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SIPs	State Implementation Plans
SRA	Source Receptor Area

TAC	Toxic Air Contaminant
TIA	Traffic Impact Analysis
TOG	Total Organic Gases
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds

1 INTRODUCTION

This report presents the results of the air quality impact analysis (AQIA) prepared by Urban Crossroads, Inc., for the proposed Wildomar Walmart (referred to as "Project"), which is located south of Bundy Canyon Road and west of Monte Vista Drive in the City of Wildomar as shown on Exhibit 1-A.

The purpose of this AQIA is to evaluate the potential impacts to air quality associated with construction and operation of the proposed Project, and recommend measures to mitigate impacts considered potentially significant in comparison to established regulatory thresholds.

1.1 SITE LOCATION

The Proposed Wildomar Walmart development which is located south of Bundy Canyon Road and west of Monte Vista Drive in the City of Wildomar as shown on Exhibit 1-A. The Project site is currently vacant

1.2 STUDY AREA

The Project site is located within an area developed mostly with residential land uses as shown on Exhibit 1-B. This includes neighboring sensitive receptors within the existing single-family detached residential community located south of the project site, east of the project site across Monte Vista Drive and north across Bundy Canyon Road.

1.3 PROJECT DESCRIPTION

The Project includes the development of approximately a 200,000 square foot Walmart, 3,900 square feet of specialty retail use, and 3,900 square feet of fast-food with drive through window restaurant use as shown on Exhibit 1-C. For the purposes of this analysis, it is assumed that the Project will be constructed and at full occupancy by 2016

1.4 PROJECT SUSTAINABILITY FEATURES

1.4.1 GENERAL

As implemented and operated, the Project will meet or surpass all California Title 24 Energy Efficiency Standards. To this end, the Project will be implemented consistent with established Walmart practices providing for energy efficiency, energy conservation, and use of alternative energy sources (summarized below). Energy-saving and sustainable design features and operational programs incorporated in the Project are summarized and described below. Pursuant to Mitigation Measure AQ-4 presented herein, the Project would be required to demonstrate a minimum 5% improvement on requirements and performance standards established under the Building Energy Efficiency Standards contained in the California Code of Regulations (CCR), Title 24, Part 6 (Title 24, Title 24 Energy Efficiency Standards).

EXHIBIT 1-A: LOCATION MAP

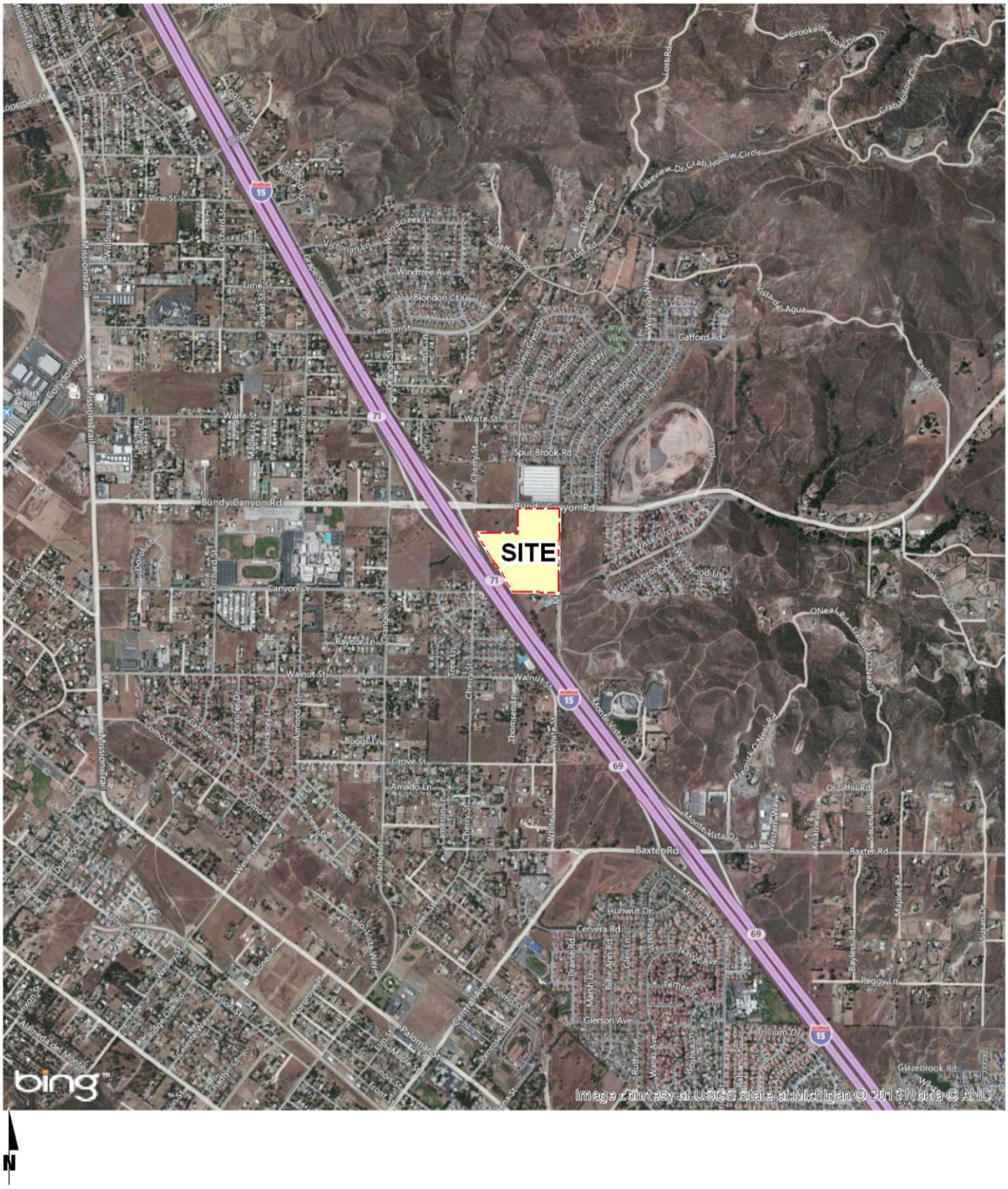
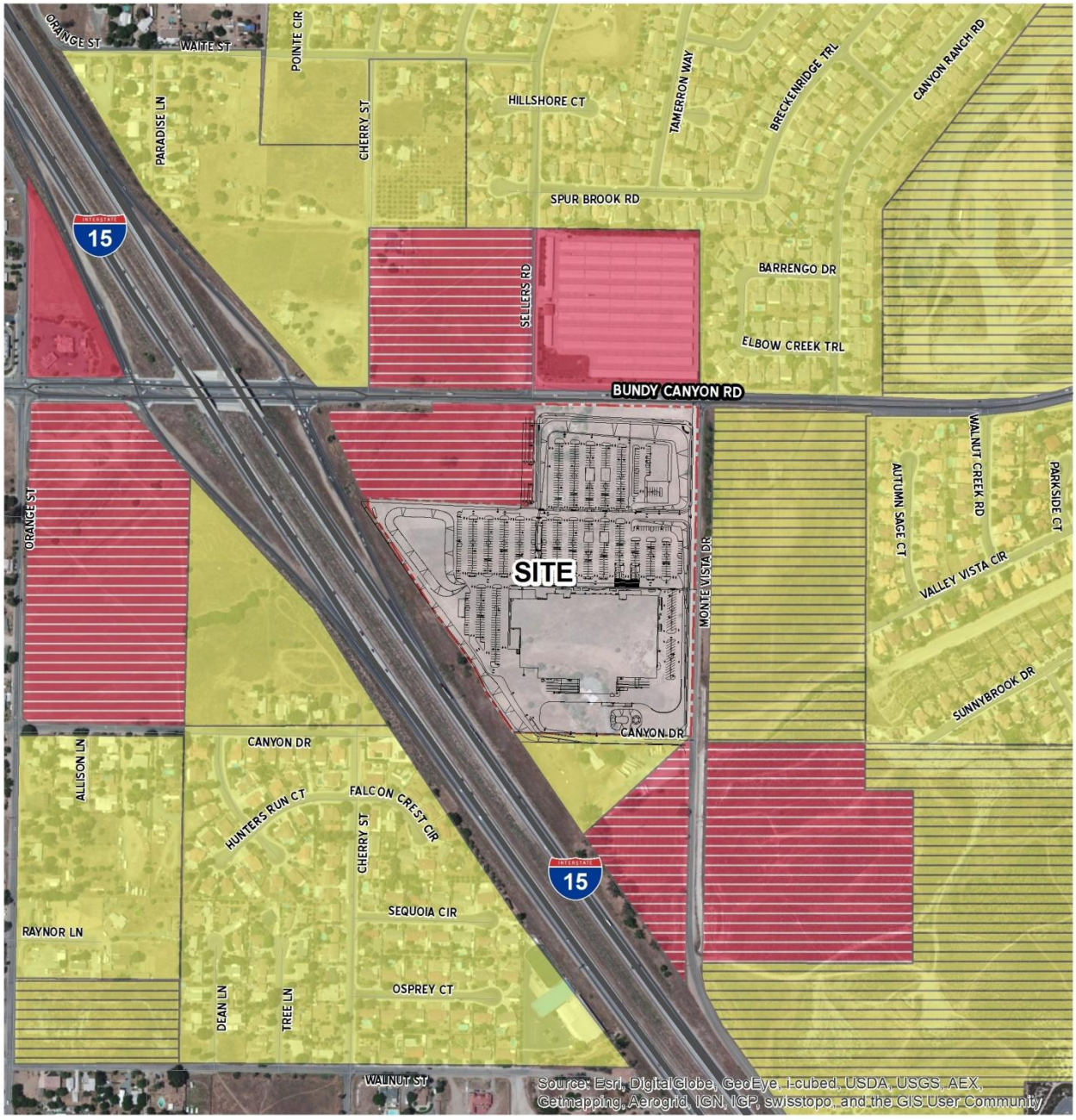


EXHIBIT 1-B: EXISTING LAND USES

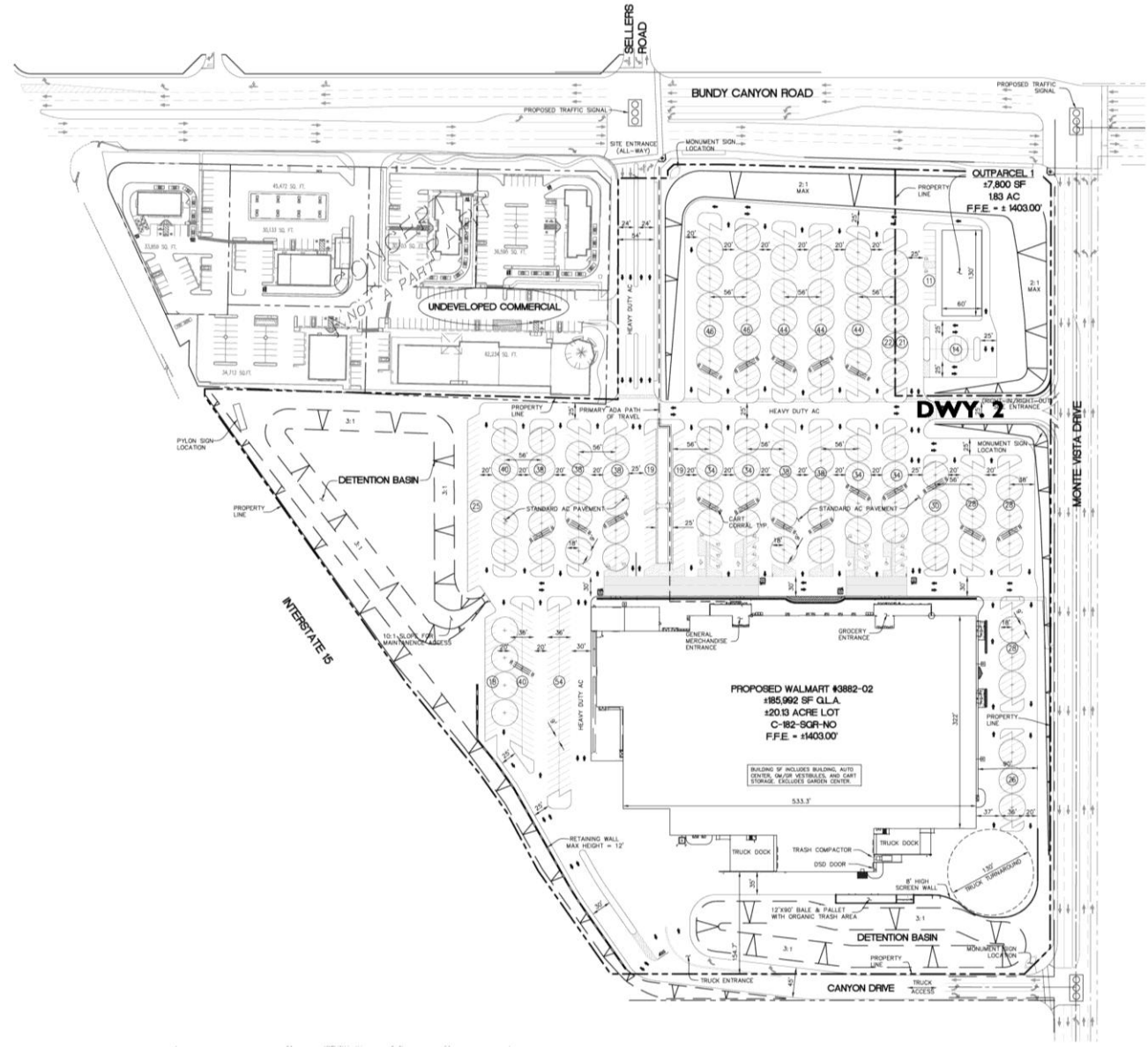


LEGEND:

- COMMERCIAL
- ZONED COMMERCIAL
- RESIDENTIAL
- ZONED RESIDENTIAL

N

EXHIBIT 1-C: PRELIMINARY SITE PLAN



BUILDING ENERGY AND RESOURCE CONSERVATION

Lighting:

- The entire store would include occupancy sensors in most non-sales areas, including restrooms, break rooms, and offices. The sensors automatically turn the lights off when the space is unoccupied.
- All lighting in the store would consist of T-8 fluorescent lamps and electronic ballasts, resulting in up to a 15 to 20 percent reduction in energy load.
- All exterior building signage and many refrigerated food cases would be illuminated with light emitting diodes (LEDs). In refrigerated food cases, LEDs perform well in the cold and produce less heat (which must be compensated for by the refrigeration equipment) than fluorescent bulbs. LEDs also contain no mercury or lead. LED technology is up to 52 percent more energy efficient than fluorescent lights. Total estimated energy savings for LED lighting in the store's grocery section is approximately 59,000 kWh per year, enough energy to power five single family homes.
- The store would include a daylight harvesting system, which incorporates more efficient lighting, electronic continuous dimming ballasts, skylights and computer controlled daylight sensors that monitor the amount of natural light available. During periods of higher natural daylight, the system dims or turns off the store lights if they are not needed, thereby reducing energy use. This program would help the store save a substantial amount of energy. Dimming and turning off building lights also helps eliminate unnecessary heat in the building.

Central Energy Management System:

- Walmart employs a centralized energy management system (EMS) to monitor and control the heating, air conditioning, refrigeration and lighting systems for all stores from Walmart's corporate headquarters in Bentonville, Arkansas. The EMS enables Walmart to constantly monitor and control the expanded store's energy use, analyze refrigeration temperatures, observe HVAC and lighting performance, and adjust system levels from a central location 24 hours per day, seven days per week. Energy use for the entire store would be monitored and controlled in this manner.

Heating Ventilation and Air Conditioning (HVAC) Systems:

- The store would employ energy efficient heating (HVAC) systems surpassing industry baseline standards and California Title 24 requirements. In this regard, current designs for Walmart stores incorporate HVAC systems rated as among the industry's most energy efficient.

Dehumidification:

- The Walmart store would include a dehumidifying system allowing the store to operate comfortably at a higher interior temperature, use less energy for air conditioning, and allow the air conditioning/refrigeration systems to operate more efficiently.

White Roofs:

- The store would utilize a white membrane roof instead of the typical darker colored roof materials employed in commercial construction. The white membrane roof's higher reflectivity

helps reduce building energy consumption and reduces the heat island effect, as compared to buildings utilizing darker roofing colors.

Refrigeration:

- Refrigeration equipment is typically roof-mounted proximate to refrigerated cases. This reduces the amount of copper refrigerant piping, insulation, and minimizes the potential for refrigerant leaks and attendant demands for refrigerant recharging. Walmart uses non ozone-depleting refrigerants (R407a and R410a) for refrigeration equipment and air conditioning, respectively.

Heat Reclamation:

- The proposed Walmart store would reclaim waste heat from onsite refrigeration equipment to supply approximately 70 percent of the hot water needs for the store.

Water Conservation:

- Walmart would install high-efficiency urinals that use only one-eighth (1/8) gallon of water per flush. This fixture reduces water use by 87 percent compared to the conventional one gallon per flush urinal. The 1/8 gallon urinal also requires less maintenance than waterless urinals.
- All restroom sinks would use sensor-activated one-half (1/2) gallon per minute high-efficiency faucets. These faucets reduce water use by approximately 75 percent when compared to mandated 1992 EPA Standards. During use, water flows through turbines built into the faucets to generate the electricity needed to operate the motion sensors.
- Water efficient restroom toilets would be employed in the Walmart restrooms. These fixtures use 20 percent less water compared to mandated EPA Standards of 1.6 gallon per flush fixtures.
    - The toilets utilize built-in water turbines to generate the power required to activate the flush mechanism. These turbines save energy and material by eliminating electrical conduits required to power automatic flush valve sensors.
    - It is estimated that Walmart's water conservation measures could save up to 530,000 gallons of water annually at this store.

Material and Finishes:

Cement Mixes

- The store would be built using cement mixes that include 15 to 20 percent fly ash, a waste product of coal-fired electrical generation, or 25 to 30 percent slag, a by-product of the steel manufacturing process. By incorporating these waste product materials into its cement mixes, Walmart offsets the greenhouse gases emitted in the cement manufacturing process.
- The store would use Non-Reinforced Thermoplastic Panel (NRP) in lieu of Fiber Reinforced Plastic (FRP) sheets on the walls in areas where plastic sheeting is appropriate, including food preparation areas, utility and janitorial areas, and associate break rooms. NRP can be recycled, has better impact resistance and, like FRP, is easy to keep clean.
- The store would employ a plant-based oil extracted from a renewable resource as a concrete form release agent (a product sprayed on concrete forms to allow ease of removal after the concrete has set). This release agent is nonpetroleum based non-toxic and a biodegradable agent. For the store's exterior and interior field paint coatings, Walmart would use low-volatile

organic (VOC) content paint consistent with South Coast Air Quality Management District (SCAQMD) requirements.

- Paint products required for the Project would be primarily purchased in 55 gallon drums and 275 gallon totes, reducing the number of one gallon and five gallon buckets needed. These plastic buckets are filled from the drums and totes and then returned to the paint supplier for cleaning and reuse.
- Exposed concrete floors are used where appropriate thereby reducing surface applied flooring materials. Use of exposed concrete floors also substantially reduces the need for most chemical cleaners, wax strippers, and propane-powered floor buffing.

Recycled Building Materials

- Construction of the store would use steel containing approximately 90 to 98 percent recycled structural steel, which utilizes less energy in the mining and manufacturing process than does new steel.
- All of the plastic baseboards and much of the plastic shelving employed in the store would be composed of recycled plastic.

Construction and Demolition (C&D) Recycling

- Walmart would develop and implement a Construction and Demolition (C&D) program at this location in order to capture and recycle as much of any metals, woods, floor and ceiling tiles, concretes, asphalts and other materials that may be generated as part of Project implementation. Walmart would work with the City and serving waste management company to fully research all available C&D recycling facilities in the area, and the Walmart C&D program would seek to include the widest possible range of materials recovery options. Throughout the course of Project construction, any demolished concrete or asphalt, concrete truck wash out, scrap building materials and construction refuse would be removed and recycled/disposed of consistent with the City's adopted Source Reduction and Recycling Element (SRRE), thereby maximizing reuse of building materials and minimizing recyclables placed within landfills.

1.5 SUMMARY OF FINDINGS

1.5.1 CONSTRUCTION-SOURCE EMISSIONS

REGIONAL IMPACTS

Project construction-source emissions would exceed the numerical regional thresholds of significance established by the South Coast Air Quality Management District (SCAQMD) for emissions of Nitrogen Oxides (NO_x) prior to implementation of applicable mitigation measures. Mitigation measures (MM AQ-1 through MM AQ-3) are recommended to reduce the impacts. After implementation of the recommended mitigation measures, construction activity emissions would not exceed the numerical thresholds established by the SCAQMD for any phase of construction activity.

LOCALIZED IMPACTS

Without mitigation, emissions during construction activity will exceed the SCAQMD's localized significance threshold for particulate matter emissions (PM10 - particulate matter ≤ 10 microns;

and PM2.5 - particulate matter ≤ 2.5 microns). It should be noted that the impacts without mitigation do not take credit for reductions achieved through best available control measures (BACMs) and standard regulatory requirements (Rule 403). After implementation of the recommended mitigation measures MM AQ-1 through MM AQ-3, the emissions resulting from short-term construction activity will not exceed the SCAQMD LST thresholds.

ODORS

Established requirements addressing construction equipment operations, and construction material use, storage, and disposal requirements act to minimize odor impacts that may result from construction activities. Moreover, construction-source odor emissions would be temporary, short-term, and intermittent in nature and would not result in persistent impacts that would affect substantial numbers of people.

1.5.2 OPERATIONAL-SOURCE EMISSIONS

REGIONAL IMPACTS

For regional emissions, the Project would exceed the numerical thresholds of significance established by the SCAQMD for emissions of NOx. No feasible mitigation measures exist that would reduce these emissions to levels that are less than the aforementioned numeric thresholds.

LOCALIZED IMPACTS

Project operational-source emissions would not exceed applicable LSTs as discussed in the operational LSTs section of this report. The Project would not result in a significant CO "hotspot" as a result of Project related traffic during ongoing operations.

ODORS

Substantial odor-generating sources include land uses such as agricultural activities, feedlots, wastewater treatment facilities, landfills or various heavy industrial uses. The Project does not propose any such uses or activities that would result in potentially significant operational-source odor impacts. Potential sources of operational odors generated by the Project would include restaurant food cooking, disposal of miscellaneous commercial refuse, and disposal of restaurant food wastes. Odors from restaurant grilling/charbroiling activities would be limited to the restaurant environs and would dissipate rapidly. Moreover, SCAQMD Rule 402 acts to prevent occurrences of odor nuisances (1). Consistent with City requirements, all Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with solid waste regulations.

1.6 CONSTRUCTION-SOURCE AIR QUALITY IMPACT MITIGATION MEASURES

Measures listed below (or equivalent language) shall appear on all Project grading plans, construction specifications and bid documents, and the City shall ensure such language is incorporated prior to issuance of any development permits. City monitoring of construction activities shall be conducted to ensure mitigation compliance.

SCAQMD Rules that are currently applicable during construction activity for this Project include but are not limited to: Rule 1113 (Architectural Coatings) (2); Rule 431.2 (Low Sulfur Fuel) (3); Rule 403 (Fugitive Dust) (4); and Rule 1186 / 1186.1 (Street Sweepers) (5).

MM AQ-1

The following measures shall be incorporated into Project plans and specifications as implementation of Rule 403 (4):

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.
- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Project are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.
- The contractor shall ensure that traffic speeds on unpaved roads and Project site areas are reduced to 15 miles per hour or less

Additional regulatory requirements that are in effect during Project construction include the following:

MM AQ-2

The California Air Resources Board, in Title 13, Chapter 10, Section 2485, Division 3 of the of the California Code of Regulations, imposes a requirement that heavy duty trucks accessing the site shall not idle for greater than five minutes at any location. This measure is intended to apply to construction traffic. Grading plans shall reference that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling (6).

In addition to the above-cited SCAQMD regulatory requirements and BACMs, the Project shall implement the following construction activity mitigation measures.

MM AQ-3

During grading activity, all construction equipment (≥ 150 horsepower) shall be California Air Resources Board (CARB) Tier 3 Certified or better. Additionally, during grading activity, total horsepower-hours per day for all equipment shall not exceed 16,784 horsepower-hours per day and the maximum disturbance (actively graded) area shall not exceed five acres per day.

1.7 OPERATIONAL-SOURCE MITIGATION MEASURES

MM AQ-4

Prior to the issuance of building permits, the Project applicant shall submit energy usage calculations showing that the Project is designed to achieve a minimum 5% efficiency beyond then incumbent California Building Code Title 24 requirements. The Project energy usage calculations shall be subject to review and approval by the City.

Examples of measures that reduce energy consumption include, but are not limited to, the following (it being understood that the items listed below are not all required and merely present examples; the list is not all-inclusive and other features that reduce energy consumption also are acceptable):

- Increase in insulation such that heat transfer and thermal bridging is minimized;
- Limit air leakage through the structure and/or within the heating and cooling distribution system;
- Use of energy-efficient space heating and cooling equipment;
- Installation of electrical hook-ups at loading dock areas;
- Installation of dual-paned or other energy efficient windows;
- Use of interior and exterior energy efficient lighting that exceeds then incumbent California Title 24 Energy Efficiency performance standards;
- Installation of automatic devices to turn off lights where they are not needed;
- Application of a paint and surface color palette that emphasizes light and off-white colors that reflect heat away from buildings;
- Design of buildings with "cool roofs" using products certified by the Cool Roof Rating Council, and/or exposed roof surfaces using light and off-white colors;
- Design of buildings to accommodate photo-voltaic solar electricity systems or the installation of photo-voltaic solar electricity systems;
- Installation of ENERGY STAR-qualified energy-efficient appliances, heating and cooling systems, office equipment, and/or lighting products.

MM AQ-5

Enhanced Water Conservation Required: Prior to the issuance of building permits, the Project applicant shall prepare a Water Conservation Strategy and demonstrating a minimum 30% reduction in outdoor water usage when compared to baseline water demand (total expected water demand without implementation of the Water Conservation Strategy)[1]. The Project Water Conservation Strategy shall be subject to review and approval by the City.

The Project shall also implement the following:

1 A reduction of 20% indoor water usage shall be achieved consistent with the current CalGreen Code (11) for residential and non-residential land uses. Per CalGreen, the reduction shall be based on the maximum allowable water use per plumbing fixture and fittings as required by the California Building Standards Code.

- Landscaping palette emphasizing drought tolerant plants;
- Use of water-efficient irrigation techniques;
- U.S. Environmental Protection Agency (EPA) Certified WaterSense labeled or equivalent faucets, high-efficiency toilets (HETs), and water-conserving shower heads.

2 AIR QUALITY SETTING

This section provides an overview of the existing air quality conditions in the Project area and region.

2.1 SOUTH COAST AIR BASIN

The Project site is located in the South Coast Air Basin (SCAB) within the jurisdiction of SCAQMD (7). The South Coast Air Basin comprises a 6,745-square mile subregion of the SCAQMD, which includes portions of Los Angeles, Riverside, and San Bernardino Counties, and all of Orange County. The larger SCAQMD boundary encompasses approximately 10,743 square miles. The SCAQMD was created by the 1977 Lewis-Presley Air Quality Management Act, which merged four county air pollution control bodies into one regional district. Under the Act, the SCAQMD is responsible for bringing air quality in areas under its jurisdiction into conformity with federal and state air quality standards.

The SCAB is bound by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Los Angeles County portion of the Mojave Desert Air Basin is bound by the San Gabriel Mountains to the south and west, the Los Angeles / Kern County border to the north, and the Los Angeles / San Bernardino County border to the east. The Riverside County portion of the Salton Sea Air Basin is bound by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley.

2.2 REGIONAL CLIMATE

The regional climate has a substantial influence on air quality in the SCAB. In addition, the temperature, wind, humidity, precipitation, and amount of sunshine influence the air quality.

The annual average temperatures throughout the SCAB vary from the low to middle 60s (degrees Fahrenheit). Due to a decreased marine influence, the eastern portion of the SCAB shows greater variability in average annual minimum and maximum temperatures. January is the coldest month throughout the SCAB, with average minimum temperatures of 47°F in downtown Los Angeles and 36°F in San Bernardino. All portions of the SCAB have recorded maximum temperatures above 100°F.

Although the climate of the SCAB can be characterized as semi-arid, the air near the land surface is quite moist on most days because of the presence of a marine layer. This shallow layer of sea air is an important modifier of SCAB climate. Humidity restricts visibility in the SCAB, and the conversion of sulfur dioxide to sulfates is heightened in air with high relative humidity. The marine layer provides an environment for that conversion process, especially during the spring and summer months. The annual average relative humidity within the SCAB is 71 percent along the coast and 59 percent inland. Since the ocean effect is dominant, periods of heavy early morning fog are frequent and low stratus clouds are a characteristic feature. These effects decrease with distance from the coast.

More than 90 percent of the SCAB's rainfall occurs from November through April. The annual average rainfall varies from approximately nine inches in Riverside to fourteen inches in downtown Los Angeles. Monthly and yearly rainfall totals are extremely variable. Summer rainfall usually consists of widely scattered thunderstorms near the coast and slightly heavier shower activity in the eastern portion of the SCAB with frequency being higher near the coast.

Due to its generally clear weather, about three-quarters of available sunshine is received in the SCAB. The remaining one-quarter is absorbed by clouds. The ultraviolet portion of this abundant radiation is a key factor in photochemical reactions. On the shortest day of the year there are approximately 10 hours of possible sunshine, and on the longest day of the year there are approximately 14 1/2 hours of possible sunshine.

The importance of wind to air pollution is considerable. The direction and speed of the wind determines the horizontal dispersion and transport of the air pollutants. During the late autumn to early spring rainy season, the SCAB is subjected to wind flows associated with the traveling storms moving through the region from the northwest. This period also brings five to ten periods of strong, dry offshore winds, locally termed "Santa Anas" each year. During the dry season, which coincides with the months of maximum photochemical smog concentrations, the wind flow is bimodal, typified by a daytime onshore sea breeze and a nighttime offshore drainage wind. Summer wind flows are created by the pressure differences between the relatively cold ocean and the unevenly heated and cooled land surfaces that modify the general northwesterly wind circulation over southern California. Nighttime drainage begins with the radiational cooling of the mountain slopes. Heavy, cool air descends the slopes and flows through the mountain passes and canyons as it follows the lowering terrain toward the ocean. Another characteristic wind regime in the SCAB is the "Catalina Eddy," a low level cyclonic (counterclockwise) flow centered over Santa Catalina Island which results in an offshore flow to the southwest. On most spring and summer days, some indication of an eddy is apparent in coastal sections.

In the SCAB, there are two distinct temperature inversion structures that control vertical mixing of air pollution. During the summer, warm high-pressure descending (subsiding) air is undercut by a shallow layer of cool marine air. The boundary between these two layers of air is a persistent marine subsidence/inversion. This boundary prevents vertical mixing which effectively acts as an impervious lid to pollutants over the entire SCAB. The mixing height for the inversion structure is normally situated 1,000 to 1,500 feet above mean sea level.

A second inversion-type forms in conjunction with the drainage of cool air off the surrounding mountains at night followed by the seaward drift of this pool of cool air. The top of this layer forms a sharp boundary with the warmer air aloft and creates nocturnal radiation inversions. These inversions occur primarily in the winter, when nights are longer and onshore flow is weakest. They are typically only a few hundred feet above mean sea level. These inversions effectively trap pollutants, such as NOX and CO from vehicles, as the pool of cool air drifts seaward. Winter is therefore a period of high levels of primary pollutants along the coastline.

2.3 WIND PATTERNS AND PROJECT LOCATION

The distinctive climate of the Project area and the SCAB is determined by its terrain and geographical location. The Basin is located in a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean in the southwest quadrant with high mountains forming the remainder of the perimeter.

Wind patterns across the south coastal region are characterized by westerly and southwesterly on-shore winds during the day and easterly or northeasterly breezes at night. Winds are characteristically light although the speed is somewhat greater during the dry summer months than during the rainy winter season.

2.4 AIR QUALITY STANDARDS

Existing air quality is measured at established SCAQMD air quality monitoring stations. Monitored air quality is evaluated and in the context of ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) currently in effect, as well health effects of each pollutant regulated under these standards are shown in Table 2-1 (8)(9).

The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to the state and federal standards presented in Table 2-1. The air quality in a region is considered to be in attainment by the state if the measured ambient air pollutant levels for O3, CO, SO2, NO2, PM10, and PM2.5 are not equaled or exceeded at any time in any consecutive three-year period; and the federal standards (other than O3, PM10, PM2.5, and those based on annual averages or arithmetic mean) are not exceeded more than once per year. The O3 standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

2.5 REGIONAL AIR QUALITY

The SCAQMD monitors levels of various criteria pollutants at 30 monitoring stations throughout the air district. In 2013, the federal and state ambient air quality standards (NAAQS and CAAQS) were exceeded on one or more days for ozone, PM10, and PM2.5 at most monitoring locations (10). No areas of the SCAB exceeded federal or state standards for NO2, SO2, CO, sulfates or lead. See Table 2-2 for attainment designations for the SCAB (11). Appendix 3.2 provides geographic representation of the state and federal attainment status for applicable criteria pollutants within the SCAB.

TABLE 2-1: AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM10)[8]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)[8]	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[9]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[10]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[10]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[10]	—	
Lead[11,12]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[13]	8 Hour	See footnote 13	Beta Attenuation and Transmittance through Filter Tape	**No National Standards**		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[11]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes at: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (6/4/13)**

TABLE 2-2: ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SOUTH COAST AIR BASIN (SCAB)

Criteria Pollutant	State Designation	Federal Designation
Ozone - 1hour standard	Nonattainment	No Standard
Ozone - 8 hour standard	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Nonattainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead[2]	Attainment	Attainment

Source: State/Federal designations were taken from http://www.arb.ca.gov/desig/adm/adm.htm
Note: See Appendix 3.2 for a detailed map of State/National Area Designations within the South Coast Air Basin

[2] The State and Federal nonattainment designation for lead is only applicable towards the Los Angeles County portion of the SCAB.

2.6 LOCAL AIR QUALITY

Relative to the Project site, The nearest long-term air quality monitoring site in relation to the project for Ozone (O_3), Carbon Monoxide (CO), and Nitrogen Dioxide (NO_2) is carried out by the South Coast Air Quality Management District (SCAQMD) at the Lake Elsinore monitoring station (SRA 25) located approximately 4.87 miles northwest of the project site (12). Data for Inhalable Particulates (PM_{10}) was obtained from the Perris Valley monitoring station (SRA 24) located approximately 11.24 miles north of the project site. Data for Ultra-Fine Particulates ($PM_{2.5}$) was obtained from the Metropolitan Riverside County 2 monitoring station (SRA 23), located approximately 23.26 miles northwest of the project site. It should be noted that the Perris Valley and Metropolitan Riverside County 2 monitoring stations were utilized in lieu of the Lake Elsinore monitoring station only where data was not available from the nearest monitoring site.

The most recent three (3) years of data available is shown on Table 2-3 and identifies the number of days ambient air quality standards were exceeded for the study area, which is was considered to be representative of the local air quality at the Project site (10) (13). Additionally, data for SO2 has been omitted as attainment is regularly met in the South Coast Air Basin and few monitoring stations measure SO2 concentrations.

Criteria pollutants are pollutants that are regulated through the development of human health based and/or environmentally based criteria for setting permissible levels. Criteria pollutants, their typical sources, and effects are identified below:

- Carbon Monoxide (CO): Is a colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone, motor vehicles operating at slow speeds are the primary source of CO in the Basin. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.
- Sulfur Dioxide (SO2): Is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When SO2 oxidizes in the atmosphere, it forms sulfates (SO4). Collectively, these pollutants are referred to as sulfur oxides (SOX).
- Nitrogen Oxides (Oxides of Nitrogen, or NOx): Nitrogen oxides (NOx) consist of nitric oxide (NO), nitrogen dioxide (NO2) and nitrous oxide (N2O) and are formed when nitrogen (N2) combines with oxygen (O2). Their lifespan in the atmosphere ranges from one to seven days for nitric oxide and nitrogen dioxide, to 170 years for nitrous oxide. Nitrogen oxides are typically created

TABLE 2-3: PROJECT AREA AIR QUALITY MONITORING SUMMARY 2010-2012

POLLUTANT[3]	STANDARD	YEAR		
		2011	2012	2013
Ozone (O_3)				
Maximum 1-Hour Concentration (ppm)		0.133	0.111	0.102
Maximum 8-Hour Concentration (ppm)		0.106	0.089	0.082
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	19	10	--
Number of Days Exceeding State 8-Hour Standard	> 0.07 ppm	45	32	--
Number of Days Exceeding Federal 1-Hour Standard	> 0.12 ppm	1	0	0
Number of Days Exceeding Federal 8-Hour Standard	> 0.075 ppm	1	17	3
Number of Days Exceeding Health Advisory	≥ 0.15 ppm	28	0	0
Carbon Monoxide (CO)				
Maximum 1-Hour Concentration (ppm)		1.7	2.7	0.7
Maximum 8-Hour Concentration (ppm)		0.7	0.7	0.4
Number of Days Exceeding State 1-Hour Standard	> 20 ppm	0	0	0
Number of Days Exceeding Federal / State 8-Hour Standard	> 9.0 ppm	0	0	0
Number of Days Exceeding Federal 1-Hour Standard	> 35 ppm	0	0	0
Nitrogen Dioxide (NO_2)				
Maximum 1-Hour Concentration (ppm)		0.0503	0.048	0.038
Annual Arithmetic Mean Concentration (ppm)		0.0096	0.0102	--
Number of Days Exceeding State 1-Hour Standard	> 0.18 ppm	0	0	0
Particulate Matter ≤ 10 Microns (PM_{10})				
Maximum 24-Hour Concentration (µg/m^3)		65	62	70
Annual Arithmetic Mean (µg/m^3)		60	26.5	--
Number of Samples		3	60	57
Number of Samples Exceeding State Standard	> 50 µg/m^3	0	1	--
Number of Samples Exceeding Federal Standard	> 150 µg/m^3	65	0	0
Particulate Matter ≤ 2.5 Microns ($PM_{2.5}$)				
Maximum 24-Hour Concentration (µg/m^3)		51.6	30.2	33.4
Annual Arithmetic Mean (µg/m^3)		11.8	11.4	11.6
Number of Samples		112	104	26
Number of Samples Exceeding Federal 24-Hour Standard	> 35 µg/m^3	2	0	0

-- = data not available from either SCAQMD or EPA

[3] Source: SCAQMD & US EPA, O3, CO, NO2 data obtained from Lake Elsinore (SRA 25) Monitoring Station, data for PM10 obtained from Perris Valley (SRA 24) Monitoring Station, data for PM2.5 obtained from Riverside County 2 (SRA 23) Monitoring Station.

during combustion processes, and are major contributors to smog formation and acid deposition. NO2 is a criteria air pollutant, and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility. Of the seven types of nitrogen oxide compounds, NO2 is the most abundant in the atmosphere. As ambient concentrations of NO2 are related to traffic density, commuters in heavy traffic may be exposed to higher concentrations of NO2 than those indicated by regional monitors.

- Ozone (O3): Is a highly reactive and unstable gas that is formed when volatile organic compounds (VOCs) and nitrogen oxides (NOX), both byproducts of internal combustion engine exhaust, undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.
- PM10 (Particulate Matter less than 10 microns): A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the lungs where they may be deposited, resulting in adverse health effects. PM10 also causes visibility reduction and is a criteria air pollutant.
- PM2.5 (Particulate Matter less than 2.5 microns): A similar air pollutant consisting of tiny solid or liquid particles which are 2.5 microns or smaller (which is often referred to as fine particles). These particles are formed in the atmosphere from primary gaseous emissions that include sulfates formed from SO2 release from power plants and industrial facilities and nitrates that are formed from NOX release from power plants, automobiles and other types of combustion sources. The chemical composition of fine particles highly depends on location, time of year, and weather conditions. PM2.5 is a criteria air pollutant.
- Volatile Organic Compounds (VOC): Volatile organic compounds are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form ozone to the same extent when exposed to photochemical processes. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include: carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a criteria pollutant since they are a precursor to O3, which is a criteria pollutant. The SCAQMD uses the terms VOC and ROG (see below) interchangeably.
- Reactive Organic Gases (ROG): Similar to VOC, Reactive Organic Gases (ROG) are also precursors in forming ozone and consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion/decomposition process. Smog is formed when ROG and nitrogen oxides react in the presence of sunlight. ROGs are a criteria pollutant since they are a precursor to O3, which is a criteria pollutant. The SCAQMD uses the terms ROG and VOC (see previous) interchangeably.
- Lead (Pb): Lead is a heavy metal that is highly persistent in the environment. In the past, the primary source of lead in the air was emissions from vehicles burning leaded gasoline. As a result of the removal of lead from gasoline, there have been no violations at any of the SCAQMD's regular air monitoring stations since 1982. Currently, emissions of lead are largely limited to stationary sources such as lead smelters. It should be noted that the Project is not anticipated to generate a quantifiable amount of lead emissions. Lead is a criteria air pollutant.

Health Effects of Air Pollutants

Ozone

Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible sub-groups for ozone effects. Short-term exposure (lasting for a few hours) to ozone at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated ozone levels are associated with increased school absences. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in communities with high ozone levels.

Ozone exposure under exercising conditions is known to increase the severity of the responses described above. Animal studies suggest that exposure to a combination of pollutants that includes ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.

Carbon Monoxide

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of decreased oxygen supply to the heart. Inhaled CO has no direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport and competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include fetuses, patients with diseases involving heart and blood vessels, and patients with chronic hypoxemia (oxygen deficiency) as seen at high altitudes.

Reduction in birth weight and impaired neurobehavioral development have been observed in animals chronically exposed to CO, resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels; these include pre-term births and heart abnormalities.

Particulate Matter

A consistent correlation between elevated ambient fine particulate matter (PM10 and PM2.5) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. In recent years, some studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

Daily fluctuations in PM2.5 concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children, and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with longterm exposure to particulate matter.

The elderly, people with pre-existing respiratory or cardiovascular disease, and children appear to be more susceptible to the effects of high levels of PM10 and PM2.5.

Nitrogen Dioxide

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposure to NO2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups.

In animals, exposure to levels of NO2 considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO2.

Sulfur Dioxide

A few minutes of exposure to low levels of SO2 can result in airway constriction in some asthmatics, all of whom are sensitive to its effects. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO2.

Animal studies suggest that despite SO2 being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.

Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO2 levels. In these studies, efforts to separate the effects of SO2 from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.

Lead

Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely affect the development and function of

the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased Pb levels are associated with increased blood pressure.

Pb poisoning can cause anemia, lethargy, seizures, and death; although it appears that there are no direct effects of Pb on the respiratory system. Pb can be stored in the bone from early age environmental exposure, and elevated blood Pb levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of Pb because of previous environmental Pb exposure of their mothers.

Odors

The science of odor as a health concern is still new. Merely identifying the hundreds of VOCs that cause odors poses a big challenge. Offensive odors can potentially affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, studies have shown that the VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects such as stress.

2.7 REGULATORY BACKGROUND

2.7.1 FEDERAL REGULATIONS

The U.S. EPA is responsible for setting and enforcing the NAAQS for O3, CO, NOx, SO2, PM10, and lead (8). The U.S. EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer Continental Shelf). The U.S. EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of the CARB.

The Federal Clean Air Act (CAA) was first enacted in 1955, and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes the federal air quality standards, the NAAQS, and specifies future dates for achieving compliance (14). The CAA also mandates that states submit and implement State Implementation Plans (SIPs) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA that identify specific emission reduction goals for areas not meeting the NAAQS require a demonstration of reasonable further progress toward attainment and incorporate additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA most directly applicable to the development of the Project site include Title I (Non-Attainment Provisions) and Title II (Mobile Source Provisions). Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O3, NO2, SO2, PM10, CO, PM2.5, and lead. The NAAQS were amended in July 1997 to include an

additional standard for O3 and to adopt a NAAQS for PM2.5. Table 3-1 (previously presented) provides the NAAQS within the basin.

Mobile source emissions are regulated in accordance with Title II provisions. These provisions require the use of cleaner burning gasoline and other cleaner burning fuels such as methanol and natural gas. Automobile manufacturers are also required to reduce tailpipe emissions of hydrocarbons and nitrogen oxides (NOx). NOx is a collective term that includes all forms of nitrogen oxides (NO, NO2, NO3) which are emitted as byproducts of the combustion process.

2.7.2 CALIFORNIA REGULATIONS

The CARB, which became part of the California EPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (AB 2595), responding to the federal CAA, and for regulating emissions from consumer products and motor vehicles. The California CAA mandates achievement of the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to attain the state ambient air quality standards by the earliest practical date. The CARB established the CAAQS for all pollutants for which the federal government has NAAQS and, in addition, establishes standards for sulfates, visibility, hydrogen sulfide, and vinyl chloride. However at this time, hydrogen sulfide and vinyl chloride are not measured at any monitoring stations in the SCAB because they are not considered to be a regional air quality problem. Generally, the CAAQS are more stringent than the NAAQS (9)(8).

Local air quality management districts, such as the SCAQMD, regulate air emissions from commercial and light industrial facilities. All air pollution control districts have been formally designated as attainment or non-attainment for each CAAQS.

Serious non-attainment areas are required to prepare air quality management plans that include specified emission reduction strategies in an effort to meet clean air goals. These plans are required to include:

- Application of Best Available Retrofit Control Technology to existing sources;
- Developing control programs for area sources (e.g., architectural coatings and solvents) and indirect sources (e.g. motor vehicle use generated by residential and commercial development);
- A District permitting system designed to allow no net increase in emissions from any new or modified permitted sources of emissions;
- Implementing reasonably available transportation control measures and assuring a substantial reduction in growth rate of vehicle trips and miles traveled;
- Significant use of low emissions vehicles by fleet operators;
- Sufficient control strategies to achieve a five percent or more annual reduction in emissions or 15 percent or more in a period of three years for ROGs, NOx, CO and PM10. However, air basins may use alternative emission reduction strategy that achieves a reduction of less than five percent per year under certain circumstances.

2.7.3 AIR QUALITY MANAGEMENT PLANNING

Currently, the NAAQS and CAAQS are exceeded in most parts of the SCAB. In response, the SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the state and

federal ambient air quality standards (15). AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy. A detailed discussion on the AQMP and Project consistency with the AQMP is provided in Section 3.8.

2.8 EXISTING PROJECT SITE AIR QUALITY CONDITIONS

The Project site is currently vacant, and therefore does not generate quantifiable emissions. Existing air quality conditions at the Project site would generally reflect ambient monitored conditions as presented previously at Table 2-3.

3 PROJECT AIR QUALITY IMPACT

3.1 INTRODUCTION

The Project has been evaluated to determine if it would violate an air quality standard or contribute to an existing or projected air quality violation. Additionally, the Project has been evaluated to determine if it would result in a cumulatively considerable net increase of a criteria pollutant for which the SCAB is non-attainment under an applicable federal or state ambient air quality standard. Applicable significance criteria are summarized below, and potential impacts are described in the following section.

3.2 STANDARDS OF SIGNIFICANCE

The SCAQMD has also developed regional and localized significance thresholds for regulated pollutants, as summarized at Table 3-1 (16). The SCAQMD's California Environmental Air Quality Act (CEQA) Air Quality Significance Thresholds (March 2011) indicate that any projects in the SCAB with daily emissions that exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact.

TABLE 3-1: MAXIMUM DAILY EMISSIONS REGIONAL THRESHOLDS

Pollutant	Construction	Operations
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
Sox	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day

Additionally, SCAQMD's CEQA Air Quality Handbook (1993) indicates a project's localized CO emissions impacts would be considered significant if they exceed the following California standards for localized CO concentrations (17):

- 1-hour CO standard of 20.0 parts per million (ppm)
- 8-hour CO standard of 9.0 ppm.

3.3 PROJECT EMISSIONS SOURCES AND EMISSIONS MODELING

Land uses such as the Project affect air quality through construction-source and operational-source emissions.

On October 2, 2013, the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) released the latest version of the California Emissions Estimator

Model™ (CalEEMod™) v2013.2.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (NO_x, VOC, PM_{10}, $PM_{2.5}$, SO_x, and CO) and greenhouse gas (GHG) emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (18). Accordingly, the latest version of CalEEMod has been used for this Project to determine construction and operational air quality emissions. Output from the model runs for both construction and operational activity are provided in Appendix 3.1.

3.4 CONSTRUCTION EMISSIONS

Construction activities associated with the Project will result in emissions of CO, VOCs, NOx, SOx, PM10, and PM2.5. Construction related emissions are expected from the following construction activities:

- Grading (including soil import)
- Utilities/Underground
- Paving (curb, gutter, flatwork, and parking lot)
- Building Construction
- Painting (Architectural Coatings)
- Construction Workers Commuting

Construction is expected to commence in September 2015 and will last through June 2016. Construction duration by phase is shown on Table 3-2. The construction schedule utilized in the analysis represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases. The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per CEQA guidelines. Site specific construction fleet may vary due to specific project needs at the time of construction. The duration of construction activity and associated equipment was estimated based on construction of similar projects and CalEEMod model defaults. Please refer to specific detailed modeling inputs/outputs contained in Appendix 3.1 of this Analysis. A detailed summary of construction equipment assumptions by phase is provided at Table 3-3. It should be noted that the emissions estimates provided at Table 3-4 represent a "worst-case" (i.e. overestimatation) of actual emissions that will likely occur.

Dust is typically a major concern during rough grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Project site will require around 60,000 cubic yards of soil import in order to balance. Soil import will commence in September 2015, concurrent with grading activity, and will last for a duration of approximately two months (45 working days). Construction emissions for construction worker vehicles traveling to and from the Project site, as well as vendor trips

TABLE 3-2: CONSTRUCTION DURATION

Phase	Duration (working days)
Grading (including Soil Import)	45
Utilities/Underground	30
Building Construction	110
Paving	35
Painting	90

TABLE 3-3: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Activity	Equipment	Number	Hours Per Day
Grading	Excavators	2	8
	Graders	2	8
	Rubber Tired Dozers	2	8
	Scrapers	2	8
	Tractors/Loaders/Backhoes	2	8
Utilities and Underground	Rubber Tired Dozers	3	8
	Tractors/Loaders/Backhoes	4	8
Building Construction	Cranes	1	8
	Forklifts	3	8
	Generator Set	1	8
	Tractors/Loaders/Backhoes	3	8
	Welders	1	8
Paving	Pavers	2	8
	Paving Equipment	2	8
	Rollers	2	8
Architectural Coatings	Air Compressors	1	8

(construction materials delivered to the Project site) were estimated based on information from the applicant and the CalEEMod model.

3.4.1 CONSTRUCTION EMISSIONS SUMMARY

Impacts without BACMs, Regulatory Requirements, and Mitigation

The estimated maximum daily construction emissions without BACMS, regulatory requirements, and mitigation are summarized on Table 3-4. Detailed construction model outputs are presented in Appendix 3.1. Under the assumed scenarios, emissions resulting from the Project construction will exceed criteria pollutant thresholds established by the SCAQMD for emissions of NOx (before mitigation). It should be noted that the impacts without mitigation do not take credit for reductions achieved through BACMs and standard regulatory requirements (SCAQMD's Rule 403) that would reduce PM10 and PM2.5 fugitive dust emissions.

TABLE 3-4: EMISSIONS SUMMARY OF OVERALL CONSTRUCTION (WITHOUT MITIGATION)

	Emissions (pounds per day)					
Construction Emissions by Year	VOC	NOx	CO	SOx	PM10	PM2.5
2015	12.15	156.63	100.93	0.20	24.66	13.45
2016	62.34	62.60	56.71	0.10	6.84	4.19
Maximum Daily Emissions	**62.34**	**156.63**	**100.93**	**0.20**	**24.66**	**13.45**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**YES**	**NO**	**NO**	**NO**	**NO**

Impacts with BACMs, Regulatory Requirements, and Mitigation

The estimated maximum daily construction emissions with BACMS, regulatory requirements, and mitigation are summarized on Table 3-5. Detailed construction model outputs are presented in Appendix 3.1. Mitigation measures (MM AQ-1 through MM AQ-3) are recommended to reduce the severity of the impact. After implementation of the recommended mitigation measures, construction activity emissions will not exceed the numerical thresholds established by the SCAQMD for criteria pollutants.

TABLE 3-5: EMISSIONS SUMMARY OF OVERALL CONSTRUCTION (WITH MITIGATION)

	Emissions (pounds per day)					
Construction Emissions by Year	VOC	NOx	CO	SOx	PM10	PM2.5
2015	8.72	92.60	81.58	0.20	12.10	6.39
2016	62.34	62.60	56.71	0.10	6.84	4.19
Maximum Daily Emissions	**62.34**	**92.60**	**81.58**	**0.20**	**12.10**	**6.39**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

3.5 OPERATIONAL EMISSIONS

Operational activities associated with the proposed Project will result in emissions of ROG, NOX, CO, SOX, PM10, and PM2.5. Operational emissions would be expected from the following primary sources:

- Mobile Source Emissions
- Fugitive dust related to vehicular travel
- Building Energy Use (combustion emissions associated with natural gas and electricity)
- Landscape maintenance equipment
- Emissions from consumer products
- Architectural coatings

3.5.1 MOBILE SOURCE EMISSIONS

Project operational (vehicular) impacts are dependent on both overall daily vehicle trip generation and the effect of the Project on peak hour traffic volumes and traffic operations in the vicinity of the Project. The Project related operational air quality impacts derive primarily from vehicle trips generated by the Project. Trip characteristics available from the report, Wildomar Walmart Traffic Impact Analysis (Urban Crossroads) 2013 were utilized in this analysis (19).

The Project would tend to reduce vehicle miles traveled (VMT) and associated vehicular-source emissions by: designing a Project that promotes a suburban center setting; increasing the diversity in land uses; providing design elements that enhance walkability and connectivity including; with connection to off-site pedestrian paths. Corresponding CalEEMod parameters have been enabled to ensure appropriate credit is taken for these design features.

3.5.2 FUGITIVE DUST RELATED TO VEHICULAR TRAVEL

Vehicles traveling on paved roads would be a source of fugitive emissions due to the generation of road dust inclusive of tire wear particulates. The emissions estimates for travel on paved roads were calculated using the CalEEMod.

3.5.3 BUILDING ENERGY USE

Electricity and natural gas are used by almost every project. Criteria pollutant emissions are emitted through the generation of electricity and consumption of natural gas. However, because electrical generating facilities for the Project area are located either outside the region (state) or offset through the use of pollution credits (RECLAIM) for generation within the SCAB, criteria pollutant emissions from offsite generation of electricity is generally excluded from the evaluation of significance and only natural gas use is considered. The emissions associated with natural gas use were calculated employing CalEEMod.

3.5.4 LANDSCAPE MAINTENANCE EQUIPMENT

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on applicable CalEEMod assumptions.

3.5.5 CONSUMER PRODUCTS

Consumer projects include, but are not limited to: detergents, cleaning compounds, polishes, personal care products, and lawn and garden products. Many of these products contain organic compounds which when released in the atmosphere can react to form ozone and other photochemically reactive pollutants. The emissions associated with use of consumer products were calculated based on applicable CalEEMod assumptions. In the case of the commercial/retail uses proposed by the Project, no substantive on-site use of consumer products is anticipated.

3.5.6 ARCHITECTURAL COATINGS

Over a period of time the buildings that are part of this Project would be subject to emissions resulting from the evaporation of solvents contained in paints, varnishes, primers, and other surface coatings as part of Project maintenance. The emissions associated with architectural coatings were calculated employing CalEEMod.

3.5.7 OPERATIONAL EMISSIONS SUMMARY

Impacts Without Mitigation

Operational-source emissions without implementation of mitigation measures are summarized on Table 3-6. For regional emissions, the Project would exceed the numerical thresholds of significance established by the SCAQMD for emissions of VOCs and NO_x. Mitigation measures (MM AQ-4 through MM AQ-5) are recommended to reduce the severity of the impact.

Impacts With Mitigation Measures

Operational-source emissions with implementation of mitigation measures are summarized on Table 3-7. Even with the application of mitigation, Project operational-source VOCs and NOx emissions would exceed the applicable SCAQMD regional threshold. No feasible mitigation measures exist that would further substantively reduce these emissions.

TABLE 3-6: SUMMARY OF PEAK OPERATIONAL-SOURCE EMISSIONS (WITHOUT MITIGATION)

Operational Activities – Summer Emissions	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Source Emissions	13.03	1.16e-3	0.12	1.00e-5	4.40e-4	4.40e-4
Energy Source Emissions	0.05	0.42	0.35	2.51e-3	0.03	0.03
Mobile Source Emissions	46.93	103.60	396.12	0.83	56.59	16.02
Maximum Daily Emissions	**60.01**	**104.02**	**396.59**	**0.83**	**56.62**	**16.05**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**YES**	**YES**	**NO**	**NO**	**NO**	**NO**

Operational Activities – Winter Emissions	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Source Emissions	13.03	1.16e-3	0.02	1.00e-5	4.40e-4	4.40e-4
Energy Source Emissions	0.05	0.42	0.35	2.51e-3	0.03	0.03
Mobile Emissions	46.02	107.56	386.34	0.78	56.60	16.03
Maximum Daily Emissions	**59.09**	**107.98**	**386.82**	**0.78**	**56.63**	**16.06**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**YES**	**YES**	**NO**	**NO**	**NO**	**NO**

TABLE 3-7: SUMMARY OF PEAK OPERATIONAL EMISSIONS (WITH MITIGATION)

Operational Activities – Summer Emissions	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Source Emissions	13.03	1.16e-3	0.12	1.00e-5	4.40e-4	4.40e-4
Energy Source Emissions	0.04	0.35	0.29	2.09e-3	0.03	0.03
Mobile Emissions	45.91	94.77	367.92	0.74	50.43	14.28
Maximum Daily Emissions	**58.97**	**95.12**	**368.33**	**0.75**	**50.46**	**14.31**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**YES**	**YES**	**NO**	**NO**	**NO**	**NO**

Operational Activities – Winter Emissions	Emissions (pounds per day)					
	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Source Emissions	13.03	1.16e-3	0.02	1.00e-5	4.40e-4	4.40e-4
Energy Source Emissions	0.04	0.35	0.29	2.09e-3	0.03	0.03
Mobile Emissions	45.04	98.29	362.39	0.69	50.44	14.29
Maximum Daily Emissions	**58.11**	**98.64**	**362.81**	**0.70**	**50.47**	**14.32**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**YES**	**YES**	**NO**	**NO**	**NO**	**NO**

3.6 LOCALIZED SIGNIFIANCE

OVERVIEW

The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (Methodology)(20). As previously discussed, the SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the federal and/or state ambient air quality standards (NAAQS/CAAQS). Collectively, these are referred to as Localized Significance Thresholds (LSTs).

The significance of localized emissions impacts depends on whether ambient levels in the vicinity of a given project are above or below State standards. In the case of CO and NO_2, if ambient levels are below the standards, a project is considered to have a significant impact if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a state or federal standard, then project emissions are considered significant if they increase ambient concentrations by a measurable amount. This would apply to PM_{10} and $PM_{2.5}$; both of which are non-attainment pollutants.

The SCAQMD established LSTs in response to the SCAQMD Governing Board's Environmental Justice 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 federal or state ambient air quality standard at the nearest residence or sensitive receptor. The SCAQMD states that lead agencies can use the LSTs as another indicator of significance in its air quality impact analyses. The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (20). For this Project, the appropriate Source Receptor Area (SRA) for the LST analysis is the Lake Elsinore area (SRA 25). LSTs apply to carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter ≤ 10 microns (PM_{10}), and particulate matter ≤ 2.5 microns ($PM_{2.5}$).

Emissions Considered

SCAQMD's Methodology clearly states that "off-site mobile emissions from the Project should NOT be included in the emissions compared to LSTs (20)." Therefore, for purposes of the construction-source emissions LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered.

Receptors

Localized air quality impacts were evaluated at sensitive receptor land uses nearest the Project site. To assess the stationary source operational and construction air impacts, the following seven sensitive receptor locations, as shown on Exhibit 3-A, were identified.

R1: Located approximately 760 feet east of the Project site across Monte Vista Drive and a vacant lot, R1 represents the existing single family residential tract homes on Autumn Sage Court.

R2: Location R2 represents the existing residential tract home development located roughly 320 feet north of the Project Site across Bundy Canyon Road.

R3: Location R3 represents the vacant lot situated approximately 100 feet east of the Project site that is zoned as residential land use.

R4: At a distance of 70 feet south of the Project site, location R4 represents the nearest sensitive receptor location.

R5: At a distance of 570 west of the Project site, noise receiver R5 describes the residential tract development located across the I-15 Freeway.

R6: Location R6 represents residential land uses receptors located approximately 560 feet east of the Project site on Falcon Crest Circle.

R7: Located approximately 760 feet east of the Project site across Monte Vista Drive and a vacant lot, R7 represents the existing single family residential tract homes on Autumn Sage Court.

Thus, the nearest potentially affected sensitive receptor is located approximately 70 feet south of the Project site (R4). Notwithstanding, the *Methodology* explicitly states that "*It is possible that a project may have receptors closer than 25 meters [82 feet]. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters* (20)." Accordingly, LSTs for receptors at 25 meters are utilized in this analysis and provide for a conservative i.e. "health protective" standard of care.

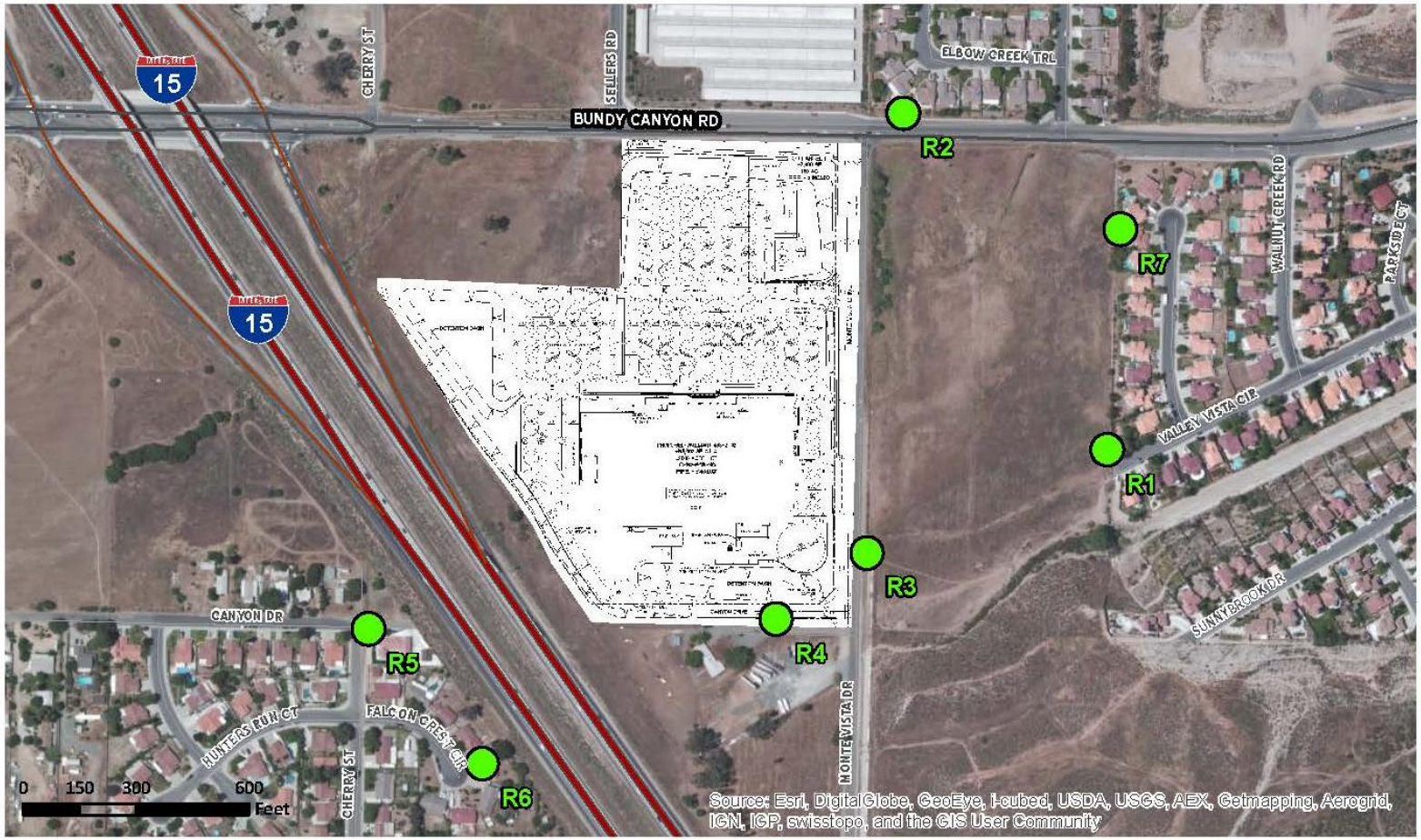
CONSTRUCTION-SOURCE EMISSIONS LST ANALYSIS

The SCAQMD has issued guidance on applying CalEEMod to LSTs. Since CalEEMod calculates construction emissions based on the number of equipment hours and the maximum daily soil disturbance activity possible for each piece of equipment, the information in Table 3-8 is used to determine the maximum daily disturbed-acreage for comparison to LSTs. To ensure consistency with LST modeling of construction-source emissions provided herein, maximum use of Project construction equipment types and their hours of operation (during grading activity) are limited as follows. Please refer also to Mitigation Measure AQ-3 for additional details.

TABLE 3-8 MAXIMUM DAILY DISTURBED-ACREAGE

Construction Phase	Equipment Type	Equipment Quantity	Acres grader per 8 hour day	Operating Hours per Day	Acres graded per day
Grading	Tractors	2	0.5	8	1
	Graders	2	0.5	8	1
	Rubber Tired Dozers	2	0.5	8	1
	Scrapers	2	1	8	2
Total acres graded per day					5.0
Applicable LST Mass Rate Look-up Table					5 acre

EXHIBIT 3-A: AIR QUALITY SENSITIVE RECEPTOR LOCATIONS



Based on Table 3-8, the Project would disturb a maximum of 5.0 acres during peak construction activity on any given day. This estimate is based on the construction equipment assumptions embedded in CalEEMod defaults and represent a reasonable approximation of the expected construction fleet as required per CEQA guidelines. Site specific construction fleet may vary due to specific project needs at the time of construction.

Impacts without BACMs, Regulatory Requirements, and Mitigation

Without BACMS, regulatory requirements, and mitigation, emissions during construction activity will exceed the SCAQMD's localized significance thresholds for emissions of PM_{10} and $PM_{2.5}$ only. Table 3-9 identifies the unmitigated localized impacts at the nearest receptor location in the vicinity of the Project.

TABLE 3-9: LOCALIZED SIGNIFICANCE SUMMARY CONSTRUCTION-SOURCE EMISSIONS (WITHOUT MITIGATION)

	Emissions (pounds per day)			
On-Site Grading Emissions	NO_x	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**104.30**	**66.80**	**20.48**	**11.67**
SCAQMD Localized Threshold	371	1,965	13	8
Threshold Exceeded?	**NO**	**NO**	**YES**	**YES**

Impacts with BACMs and Regulatory Requirements

After the implementation of BACMS, regulatory requirements, and applicable mitigation measures (MM AQ1 through MM AQ3), emissions during construction activity will not exceed the SCAQMD's localized significance threshold for any of the applicable emissions. Table 3-10 identifies the mitigated localized impacts at the nearest receptor location in the vicinity of the Project.

TABLE 3-10: LOCALIZED SIGNIFICANCE SUMMARY CONSTRUCTION-SOURCE EMISSIONS (WITH MITIGATION)

	Emissions (pounds per day)			
On-Site Grading Emissions	NO_x	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**40.27**	**47.44**	**7.92**	**4.60**
SCAQMD Localized Threshold	371	1,965	13	8
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

OPERATIONAL-SOURCE EMISSIONS LST ANALYSIS

Table 3-11 shows the calculated emissions for the Project's operational activities compared with the applicable LSTs. The LST analysis includes on-site sources only; however, the CalEEMod™ model outputs do not separate on-site and off-site emissions from mobile sources. In an effort to establish a maximum potential impact scenario for analytic purposes, the

emissions shown on Table 3-10 represent all on-site Project-related stationary (area) sources and five percent (5%) of the Project-related mobile sources. Considering that the weighted trip length used in CalEEMod™ for the Project is approximately 16.6 miles, 5% of this total would represent an on-site travel distance for each car and truck of approximately 1 mile or 5,280 feet, thus the 5% assumption is conservative and would tend to overstate the actual impact. Modeling based on these assumptions demonstrates that even within broad encompassing parameters, Project operational-source emissions would not exceed applicable LSTs.

The operational LSTs are located approximately 11.05 meters south of the Project site (zoned rural residential uses) within SRA 24.

TABLE 3-11: LOCALIZED SIGNIFICANCE SUMMARY OPERATIONS (WITHOUT MITIGATION)

Operational Activity	Emissions (pounds per day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**5.81**	**20.28**	**2.86**	**0.83**
SCAQMD Localized Threshold	371	1,965	4	2
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

As shown on Table 3-11, operational emissions would not exceed the LST thresholds for the nearest sensitive receptor.

3.7 CO "HOT SPOT" ANALYSIS

As discussed below, the Project would not result in potentially adverse CO concentrations or "hot spots." Further, detailed modeling of Project-specific carbon monoxide (CO) "hot spots" is not needed to reach this conclusion.

It has long been recognized that adverse localized CO concentrations ("hot spots") are caused by vehicular emissions, primarily when idling at congested intersections. In response, vehicle emissions standards have become increasingly stringent in the last twenty years. Currently, the allowable CO emissions standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of increasingly sophisticated and efficient emissions control technologies, CO concentrations in the Project vicinity have steadily declined, as indicated by historical emissions data presented previously at Table 2-3.

A CO "hotspot" would occur if an exceedance of the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur. At the time of the 1993 Handbook, the SCAB was designated nonattainment under the California AAQS and National AAQS for CO (17). As identified within SCAQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan), peak carbon monoxide concentrations in the SCAB were a result of unusual meteorological and topographical conditions and not a result of congestion at a particular intersection (21). To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO "hot spot" analysis was conducted in 2003 for four busy intersections

in Los Angeles at the peak morning and afternoon time periods. This hot spot analysis did not predict any violation of CO standards. It can therefore be reasonably concluded that projects (such as the proposed Wildomar Walmart) that are not subject to the extremes in vehicle volumes and vehicle congestion that was evidenced in the 2003 Los Angeles hot spot analysis would similarly not create or result in CO hot spots. Similar considerations are also employed by other Air Districts when evaluating potential CO concentration impacts. More specifically, the Bay Area Air Quality Management District (BAAQMD) concludes that under existing and future vehicle emission rates, a given project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact (22). The proposed Project considered herein would not produce the volume of traffic required to generate a CO hotspot either in the context of the 2003 Los Angeles hot spot study, or based on representative BAAQMD CO threshold considerations (see Table 3-12). Therefore, CO hotspots are not an environmental impact of concern for the proposed Project. Localized air quality impacts related to mobile-source emissions would therefore be less than significant.

TABLE 3-12: PROJECT PEAK HOUR TRAFFIC VOLUMES

Intersection Location	Northbound (AM/PM/SMD)	Southbound (AM/PM/SMD)	Eastbound (AM/PM/SMD)	Westbound (AM/PM/SMD)	Total (AM/PM/SMD)
Orange St & Bundy canyon Rd	149/268/169	424/248/316	1,489/1,528 /1,360	761/1,009 /949	2,823/3,053 /2,794
I-15 SB Ramps & Bundy canyon Rd	--/--/--	935/709/698	1,165/1,584 /1,189	1,231/1,441 /1,267	3,331/3,734 /3,154
I-15 NB Ramps & Bundy canyon Rd	634/421/436	--/--/--	1,041/1,905 /1,216	1,447/1,292 /1,162	3,122/3,618 /2,814
Murrieta Rd & Scott Rd	586/848 /243	--/--/--	1,166/1,186 /506	1,033/1,071/557	2,785/3,105 /1,306

Source: Wildomar Walmart Traffic Impact Analysis (Urban Crossroads, Inc., 2013).

3.8 AIR QUALITY MANAGEMENT PLANNING

The Project site is located within the SCAB, which is characterized by relatively poor air quality. The SCAQMD has jurisdiction over an approximately 10,743 square-mile area consisting of the four-county Basin and the Los Angeles County and Riverside County portions of what use to be referred to as the Southeast Desert Air Basin. In these areas, the SCAQMD is principally responsible for air pollution control, and works directly with the Southern California Association of Governments (SCAG), county transportation commissions, local governments, as well as state and federal agencies to reduce emissions from stationary, mobile, and indirect sources to meet state and federal ambient air quality standards.

Currently, these state and federal air quality standards are exceeded in most parts of the Basin. In response, the SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the state and federal ambient air quality standards. AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy.

The Final 2012 AQMP was adopted by the AQMD Governing Board on December 7, 2012 (15). The 2012 AQMP incorporates the latest scientific and technological information and planning assumptions, including the 2012 Regional Transportation Plan/Sustainable Communities Strategy and updated emission inventory methodologies for various source categories.

Similar to the 2007 AQMP, the 2012 AQMP was based on assumptions provided by both CARB and SCAG in the latest available EMFAC model for the most recent motor vehicle and demographics information, respectively. The air quality levels projected in the 2012 AQMP are based on several assumptions. For example, the 2012 AQMP has assumed that development associated with general plans, specific plans, residential projects, and wastewater facilities will be constructed in accordance with population growth projections identified by SCAG in its 2012 RTP. The 2012 AQMP also has assumed that such development projects will implement strategies to reduce emissions generated during the construction and operational phases of development. The Project's consistency with the 2012 AQMP is discussed as follows:

Criteria for determining consistency with the AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the SCAQMD's CEQA Air Quality Handbook (1993) (17). These indicators are discussed below:

- Consistency Criterion No. 1: The proposed Project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.

Construction Impacts

Consistency Criterion No. 1 refers to violations of the CAAQS and NAAQS. CAAQS and NAAQS violations would occur LSTs were exceeded. As evaluated as part of the Project LST analysis (previously presented), the Project's mitigated localized construction-source emissions would not exceed applicable LSTs.

Operational Impacts

The Project LST analysis demonstrates that Project operational-source emissions would not exceed applicable LSTs, and would therefore not result in or cause violations of the CAAQS and NAAQS

On the basis of the preceding discussion, the Project is determined to be consistent with the first criterion.

- Consistency Criterion No. 2: The Project would not exceed the assumptions in the AQMP based on the years of Project build-out phase.

Overview

The 2012 AQMP demonstrates that the applicable ambient air quality standards can be achieved within the timeframes required under federal law. Growth projections from local general plans adopted by cities in the district are provided to the Southern California Association of Governments (SCAG), which develops regional growth forecasts, which are then used to develop future air quality forecasts for the AQMP. Development consistent with the growth projections in the City of Wildomar General Plan is considered to be consistent with the AQMP.

The Project site has a General Plan land use designation of Commercial Retail (CR). Zoning for the site is Rural Residential (R-R). In order to provide consistency with the site's General Plan designation, and allow for the proposed commercial uses, the Project will require a zone change from Rural Residential to Scenic Highway Commercial.

Construction Impacts

The proposed changes in land use designations described above would not substantively affect construction-source emissions impacts. That is, peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. Irrespective of the site's land use designation, development of the site to its maximum potential would likely occur, with disturbance of the entire site occurring during construction activities.

Operational Impacts

Development proposed by the Project is consistent with the growth projections in the City of Wildomar General Plan and is therefore considered to be consistent with the AQMP. Although, Project operational-source emissions would result in exceedances of applicable SCAQMD regional thresholds, these emissions are assumed to be included in the AQMP. Moreover, the location of the Project proximate to local and regional transportation facilities acts to reduce vehicle miles traveled and associated mobile-source (vehicular) emissions. Additionally, Project incorporation of contemporary energy-efficient technologies and operational programs, and compliance with SCAQMD emissions reductions and control requirements act to reduce stationary-source air emissions. These Project attributes and features are consistent with and support AQMP air pollution reduction strategies and promote timely attainment of AQMP air quality standards.

On the basis of the preceding discussion, the Project is determined to be consistent with the second criterion.

AQMP Consistency Conclusion

The Project would not result in or cause NAAQS or CAAQS violations. The Project's proposed land use designation for the subject site does not materially affect the uses allowed or their development intensities as reflected in the adopted City General Plan. The Project is therefore considered to be consistent with the AQMP.

3.9 POTENTIAL IMPACTS TO SENSITIVE RECEPTORS

The potential impact of Project-generated air pollutant emissions at sensitive receptors has also been considered. Sensitive receptors can include uses such as long term health care facilities, rehabilitation centers, and retirement homes. Residences, schools, playgrounds, child care centers, and athletic facilities can also be considered as sensitive receptors.

Results of the LST analysis indicate that the Project will not exceed the SCAQMD localized significance thresholds during construction (after mitigation). Therefore sensitive receptors would not be subject to a significant air quality impact during Project construction.

Results of the LST analysis indicate that the Project will not exceed the SCAQMD localized significance thresholds during operational activity. The proposed Project would not result in a CO "hotspot" as a result of Project related traffic during ongoing operations, nor would the Project result in a significant adverse health impact as discussed in Section 3.7.

3.10 ODORS

Substantial odor-generating sources include land uses such as agricultural activities, feedlots, wastewater treatment facilities, landfills or various heavy industrial uses. The Project does not propose any such uses or activities that would result in potentially significant operational-source odor impacts. Potential sources of operational odors generated by the Project would include disposal of miscellaneous commercial refuse. Consistent with City requirements, all Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with solid waste regulations, thereby precluding substantial generation of odors due to temporary holding of refuse on-site Moreover, SCAQMD Rule 402 acts to prevent occurrences of odor nuisances (1).

4 REFERENCES

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5 CERTIFICATION

The contents of this air study report represent an accurate depiction of the environmental impacts associated with the proposed Wildomar Walmart Project. The information contained in this air quality impact assessment report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 660-1994 ext. 217.

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AEP – Association of Environmental Planners
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ASTM – American Society for Testing and Materials

PROFESSIONAL CERTIFICATIONS

Environmental Site Assessment – American Society for Testing and Materials • June, 2013
Planned Communities and Urban Infill – Urban Land Institute • June, 2011
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April, 2008
Principles of Ambient Air Monitoring – California Air Resources Board • August, 2007
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APPENDIX 3.1:

CALEEMOD EMISSIONS MODEL OUTPUTS

APPENDIX 3.2:

STATE/FEDERAL ATTAINMENT STATUS OF CRITERIA POLLUTANTS

Wildomar Walmart

AIR TOXICS HEALTH RISK ASSESSMENT

CITY OF WILDOMAR

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APRIL 3, 2014

TABLE OF CONTENTS

APPENDICES

LIST OF EXHIBITS

LIST OF TABLES

LIST OF ABBREVIATED TERMS

(1)	Reference
µg	Microgram
AERMOD	Atmospheric Dispersion Modeling System
APS	Auxiliary Power System
AQMD	Air Quality Management District
ARB	Air Resources Board
CEQA	California Environmental Quality Act
CPF	Cancer Potency Factor
DPM	Diesel Particulate Matter
EMFAC	Emission Factor Model
EPA	Environmental Protection Agency
HHD	Heavy Heavy-Duty
HI	Hazard Index
HRA	Health Risk Assessment
LHD	Light Heavy-Duty
MATES	Multiple Air Toxics Exposure Study
MEIR	Maximally Exposed Individual Receptor
MEISC	Maximally Exposed Individual School Child
MEIW	Maximally Exposed Individual Worker
MHD	Medium Heavy-Duty
NAD	North American Datum
OEHHA	Office of Environmental Health Hazard
PCE	Passenger Car Equivalent
PM10	Particulate Matter 10 microns in diameter or less
Project	Wildomar Walmart
REL	Reference Exposure Level
RM	Recommended Measures
SCAQMD	South Coast Air Quality Management District
SRA	Source Receptor Area
TAC	Toxic Air Contaminant
TIA	Traffic Impact Analysis
URF	Unit Risk Factor
UTM	Universal Transverse Mercator
VMT	Vehicle Miles Traveled

1 INTRODUCTION

The purpose of this Health Risk Assessment (HRA) is to evaluate potential toxic air contaminant (TAC) health risks associated with the proposed Wildomar Walmart Project (Project). TACs of primary concern for the Project would be diesel particulate matter (DPM) generated by heavy-duty diesel trucks accessing the site.

The South Coast Air Quality Management District (SCAQMD) typically issues a comment letter on the Notice of Preparation of a CEQA Document. Per the SCAQMD's typical comment letter, if a project is expected to generate/attract diesel trucks, which emit DPM and other TACs, preparation of a HRA is necessary. This document serves to meet the SCAQMD's request for preparation of a HRA. The mobile source HRA has been prepared in accordance with the document Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis (1). Cancer risk is expressed in terms of expected incremental incidence per million populations. The SCAQMD has established an incidence rate of ten (10) persons per million as the maximum acceptable incremental cancer risk due to TAC exposure. This threshold serves to determine whether or not a given project would result in potentially significant TAC-source cancer health risk.

The SCAQMD has also established non-carcinogenic risk parameters for use in HRAs. Non-carcinogenic risks are quantified by calculating a "hazard index," expressed as the ratio between the ambient pollutant concentration and its toxicity or Reference Exposure Level (REL). An REL is a concentration at or below which health effects are not likely to occur. A hazard index less of than one (1.0) means that adverse health effects are not expected.

1.1 SITE LOCATION

The proposed Wildomar Walmart development which is located south of Bundy Canyon Road and west of Monte Vista Drive in the City of Wildomar as shown on Exhibit 1-A. The Project site is currently vacant.

1.2 STUDY AREA

The project site is located within area developed mostly with residential land uses as shown on Exhibit 1-B. This includes the neighboring sensitive receptors within the existing single-family detached residential community located south of the project site, east of the of the project site across Monte Vista Drive and north across Bundy Canyon Road.

1.3 PROJECT DESCRIPTION

The Project includes the development of approximately a 200,000 square foot Walmart, 3,900 square feet of specialty retail use and 3,900 square feet of fast-food with drive through window restaurant use as shown on Exhibit 1-C. For the purposes of this analysis, it is assumed that the Project will be constructed and at full occupancy by 2016.

EXHIBIT 1-A: LOCATION MAP

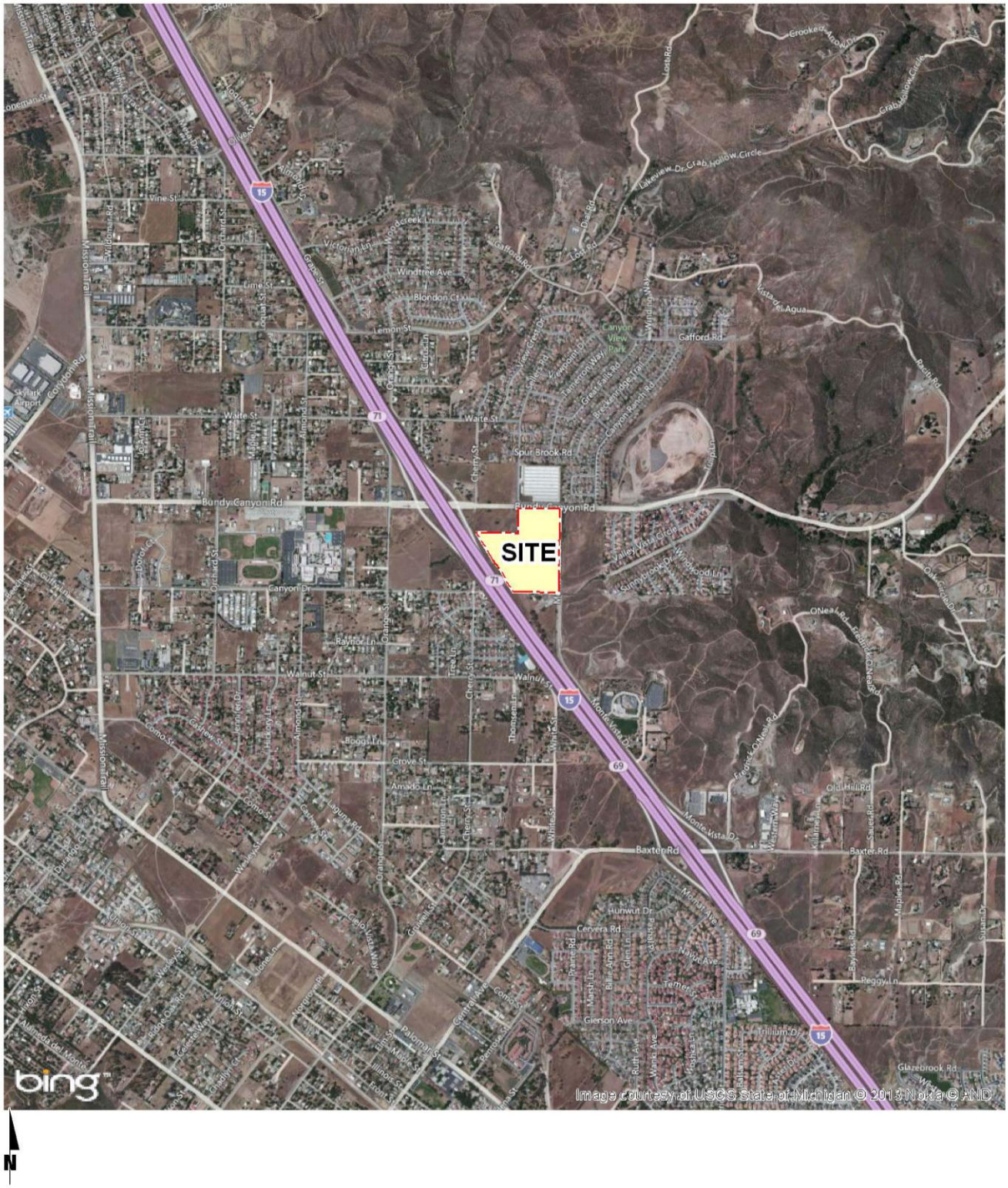


EXHIBIT 1-B: EXISTING LAND USES

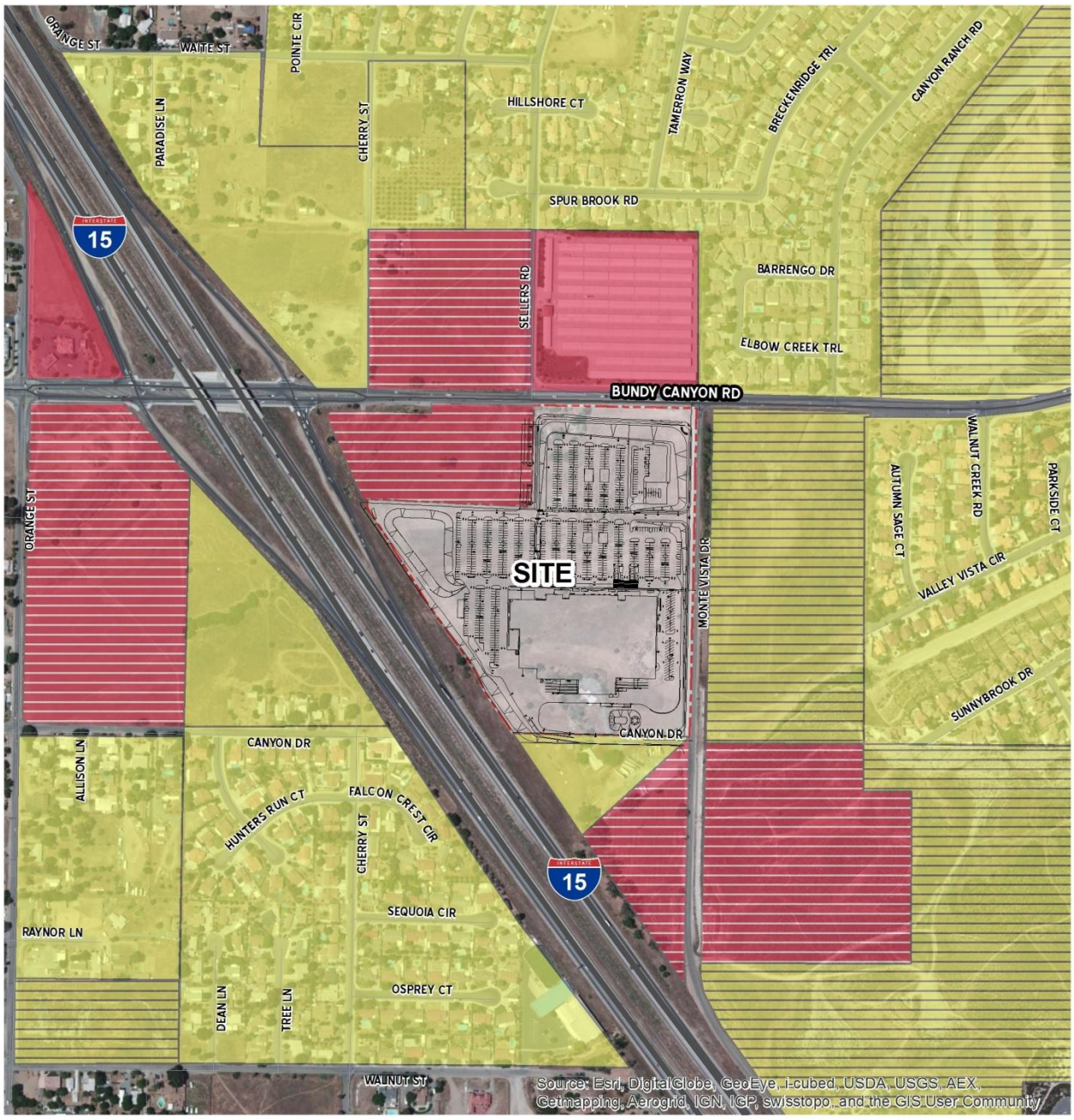
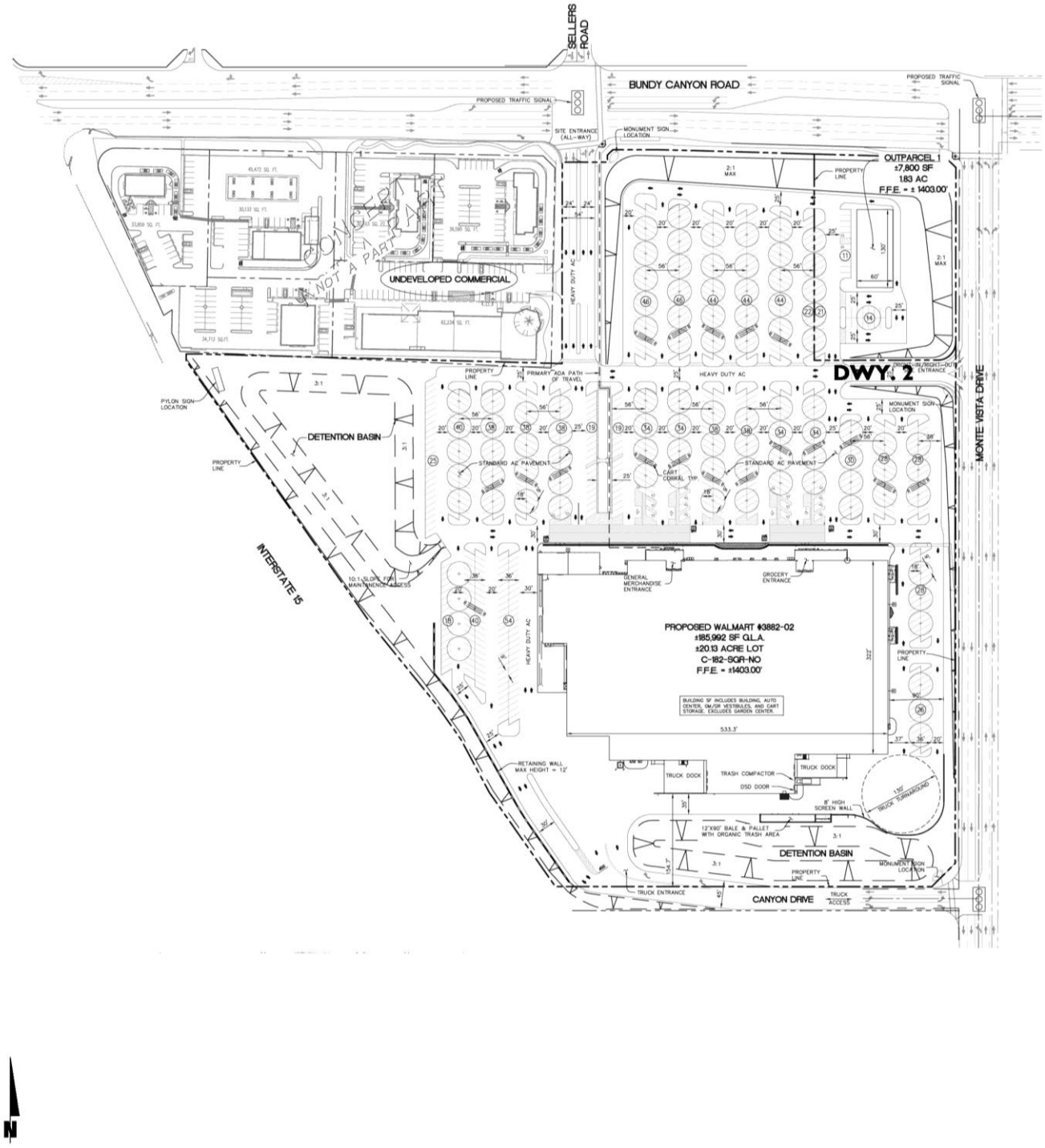


EXHIBIT 1-C: PRELIMINARY SITE PLAN



1.4 SUMMARY OF FINDINGS/CONCLUSIONS

Potential health risks (cancer and non-cancer risks) from Project-generated TACs are provided at Table 1-1.

Residential Exposure Scenario:

The residential land use with the greatest potential exposure to Project TAC source emissions is located approximately 65 feet east of the Project site across Monte Vista Drive. It should be noted that no residences currently exist at this location however it was included in modeling purposes since this area is zoned residential. At the maximally exposed individual receptor (MEIR), the maximum incremental cancer risk attributable to Project TAC source emissions is estimated at 3.01 in one million, which is less than the threshold of 10 in one million. At this same location, non-cancer risks were estimated to be 0.002, which would not exceed the applicable threshold of 1.0. Exhibit 2-B illustrates the nearest modeled residential receptors and the MEIR.

Worker Exposure Scenario:

The worker receptor land use with the greatest potential exposure to Project TAC source emissions is located approximately 165 feet southeast of the Project site across Monte Vista Drive. At the maximally exposed individual worker (MEIW), the maximum incremental cancer risk impact at this location is 0.30 in one million which is less than the threshold of 10 in one million. At this same location, non-cancer risks were estimated to be 0.0004, which would not exceed the applicable threshold of 1.0. Exhibit 2-C illustrates the nearest modeled worker receptors and the MEIW.

School Child Exposure Scenario:

The school site land use with the greatest potential exposure to Project TAC source emissions is the Cornerstone Christian School located approximately 1,700 feet southeast of the Project site. At the maximally exposed individual school child (MEISC), the maximum incremental cancer risk impact is 0.02 in one million which are less than the threshold of 10 in one million. At this same location, non-cancer risks were estimated to be 0.0001, which would not exceed the applicable threshold of 1.0. Exhibit 2-D illustrates the nearest modeled school child receptors and the MEISC.

TABLE 1-1: SUMMARY OF CANCER RISKS ATTRIBUTABLE TO THE PROJECT

Time Period	Location	Maximum Lifetime Cancer Risk (Risk per Million)	Significance Threshold (Risk per Million)	Exceeds Significance Threshold
70 Year Exposure (2016 to 2085)	Maximum Exposed Sensitive Receptor	3.01	10	NO
40 Year Exposure (2016 to 2055)	Maximum Exposed Worker Receptor	0.30	10	NO
9 Year Exposure (2016 to 2024)	Maximum Exposed School Child	0.02	10	NO

1.5 REQUIREMENTS

The Project would be required to comply with all mandatory regulatory requirements imposed by the State of California and the South Coast Air Quality Management District aimed at the reduction of air quality emissions. It should be noted that the analysis herein does not take any "credit" or "reduction" for the following measures. Those that are applicable to the Project and that would assist in the reduction of diesel particulate emissions are:

CARB Air Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling limits the idling of diesel vehicles to reduce emissions of toxics and criteria pollutants. The driver of any vehicle subject to this section: (1) shall not idle the vehicle's primary diesel engine for greater than five minutes at any location; and (2) shall not idle a diesel-fueled auxiliary power system (APS) for more than five minutes to power a heater, air conditioner, or any ancillary equipment on the vehicle if it has a sleeper berth and the truck is located within 100 feet of a restricted area (homes and schools) (2).

CARB Final Regulation Order, Requirements to Reduce Idling Emissions from New and In-Use Trucks, beginning in 2008, would require that new 2008 and subsequent model-year heavy-duty diesel engines be equipped with an engine shutdown system that automatically shuts down the engine after 300 seconds of continuous idling operation once the vehicle is stopped, the transmission is set to "neutral" or "park", and the parking brake is engaged (3).

2 BACKGROUND

2.1 REGULATORY SETTING

CARB estimates that the average Californian is exposed to 1.2-1.8 µg/m^3 of DPM, this exposure results in an average cancer risk of 360-540 in one million for the average Californian exposed to DPM (4).

As noted above, this HRA is based on SCAQMD guidelines to produce conservative estimates of risk posed by exposure to DPM. The conservative nature of this analysis is due primarily to the following factors:

The CARB-adopted diesel exhaust URF of 300 in one million per µg/m3 is based upon the upper 95 percentile of estimated risk for each of the epidemiological studies utilized to develop the URF. Therefore the risk factor is already representative of the conservative risk posed by DPM.

The risk estimates assume sensitive receptors will be subject to DPM for 24 hours a day, 365 days a year. As a conservative measure, the SCAQMD does not recognize indoor adjustments for residents. However, the typical person spends the majority of their time indoors versus remaining outdoors for 24 hours a day, 365 days a year.[1]

The exposure to DPM is assumed to be constant for the given period analyzed (i.e., 70 years). It should be noted however that emissions from DPM are expected to substantially decrease in the future with the implementation of standard regulatory requirements and technological advancement to reduce DPM.

The emissions derived assume that every truck accessing the project site will idle for 15 minutes, this is an overestimation of actual idling times and thus conservative.[2]

2.2 EMISSIONS ESTIMATION

Vehicle DPM emissions were estimated using emission factors for particulate matter less than 10µm in diameter (PM_{10}) generated with the 2011 version of the Emission FACtor model (EMFAC) developed by the ARB. EMFAC 2011 is a mathematical model that was developed to calculate emission rates from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the ARB to project changes in future emissions

[1] In May, 1991 the California Air Resources Board (CARB) Research Division in association with the University of California, Berkeley published research findings entitled: *Activity Patterns of California Residents*. The findings of that study indicate that on average, adults and adolescents in California spent almost 15 hours per day inside their homes, and six hours in other indoor locations, for a total of 21 hours (87% of the day). About 2 hours per day were spent in transit, and just over 1 hour per day was spent in outdoor locations.

[2] Although the Project is required to comply with CARB's idling limit of 5 minutes, staff at SCAQMD recommends that the on-site idling emissions should be estimated for 15 minutes of truck idling (personal communication, phone call, with James Koizumi, May 6, 2009), which would take into account on-site idling which occurs while the trucks are waiting to pull up to the truck bays, idling at the bays, idling at check-in and check-out, etc.

from on-road mobile sources (5). The most recent version of this model, EMFAC 2011, incorporates regional motor vehicle data, information and estimates regarding the distribution of vehicle miles traveled (VMT) by speed, and number of starts per day.

The most important improvement in EMFAC 2011 is the integration of the new data and methods to estimate emissions from diesel trucks and buses. EMFAC 2011 uses the same diesel truck and bus vehicle populations, miles traveled and other emissions-related factors developed for the Truck and Bus Rule approved by the Air Resources Board in 2010. The model includes the emissions benefits of the truck and bus rule and the previously adopted rules for other on-road diesel equipment. Finally, the impacts of the recession (2007-2009) on emissions that were quantified as part of the truck and bus rulemaking are included.

Several distinct emission processes are included in EMFAC 2011. Emission factors calculated using EMFAC 2011 are expressed in units of grams per vehicle miles traveled (g/VMT) or grams per idle-hour (g/idle-hr), depending on the emission process. The emission processes and corresponding emission factor units associated with diesel particulate exhaust for this Project are presented below.

For this Project, annual average PM_{10} emission factors were generated by running EMFAC 2011 in EMFAC Mode for vehicles in the SCAQMD district. The EMFAC Mode generates emission factors in terms of grams of pollutant emitted per vehicle activity and can calculate a matrix of emission factors at specific values of temperature, relative humidity, and vehicle speed. The model was run for speeds traveled in the vicinity of the Project. The vehicle travel speeds for each segment modeled are summarized below.

- Idling – on-site loading/unloading and truck gate
- 5 miles per hour – on-site vehicle movement including driving and maneuvering
- 25 miles per hour – off-site vehicle movement including driving and maneuvering.

The average PM10 emission factors for each type of vehicle were calculated based on the annual average emission factors from different model years for various exposure periods associated with assumptions for evaluating exposure to different receptor populations (e.g., sensitive, offsite worker and resident, respectively):

1. 70-year exposure: 2016 through 2085 (Residential Exposure Scenario)
2. 40-year exposure: 2016 through 2055 (Worker Exposure Scenario)
3. 9-yr exposure: 2016 through 2024 (School Child Exposure Scenario)

Calculated emission factors for each of these scenarios are shown in Table 2-1. The emission factors for model years beyond 2035 were assumed to be the same as emission factors in 2035 due to the fact that EMFAC 2011 only contains emission factors for the model year from 1990 through 2035. This is a conservative measure as it assumes no fleet turnover or cleaner technology with lower emissions could be incorporated after 2035.

The vehicle DPM exhaust emissions were calculated for running exhaust emissions. The running exhaust emissions were calculated by applying the running exhaust PM10 emission factor (g/VMT) from EMFAC over the total distance traveled. The following equation was used to estimate off-site emissions for each of the different vehicle classes comprising the mobile sources (5):

$Emissions_{speedA}$ (g/s) = $EF_{RunExhaust}$ (g/VMT) * Distance (VMT/trip) * Number of Trips (trips/day) / seconds per day

Where:

$Emissions_{speedA}$ (g/s): Vehicle emissions at a given speed A;

$EF_{RunExhaust}$ (g/VMT): EMFAC running exhaust PM_{10} emission factor at speed A;

Distance (VMT/trip): Total distance traveled per trip.

Similar to off-site traffic, on-site vehicle running emissions were calculated by applying the running exhaust PM_{10} emission factor (g/VMT) from EMFAC and the total vehicle trip number over the length of the driving path using the same formula presented above for on-site emissions. In addition, on-site vehicle idling exhaust emissions were calculated by applying the idle exhaust PM_{10} emission factor (g/idle-hr) from EMFAC and the total truck trip over the total idle time (15 minutes). The following equation was used to estimate the on-site vehicle idling emissions for each of the different vehicle classes (5):

$Emissions_{idle}$ (g/s) = EF_{idle} (g/hr) * Number of Trips (trips/day) * Idling Time (min/trip) *

60 minutes per hour / seconds per day

Where:

$Emissions_{idle}$ (g/s): Vehicle emissions during idling;

EF_{idle}(g/s): EMFAC idle exhaust PM_{10} emission factor.

TABLE 2-1: WEIGHTED AVERAGE DPM EMISSIONS FACTORS

2016-2085 – 70 Year Residential Exposure Scenario	
Speed	Weighted Average
0 (idling)	0.48265 (g/idle-hr)
5	0.06900 (g/s)
25	0.03986 (g/s)
2016-2055 – 40 Year Worker Exposure Scenario	
Speed	Weighted Average
0 (idling)	0.48457(g/idle-hr)
5	0.07236 (g/s)
25	0.04109 (g/s)
2016-2024 – 9 Year School Child Exposure Scenario	
Speed	Weighted Average
0 (idling)	0.49562 (g/idle-hr)
5	0.09467 (g/s)
25	0.04913 (g/s)

Each roadway was modeled as a line source (made up of multiple adjacent volume sources). Due to the large number of volume sources modeled for this analysis, the corresponding coordinates of each volume source have not been included in this report, but are included in Appendix "A". The DPM emission rate for each volume source was calculated by multiplying the emission factor (based on the average travel speed along the roadway) by the number of trips and the distance traveled along each roadway segment and dividing the result by the number of volume sources along that roadway. On-site idling at the Walmart and outparcel were modeled as point sources at the loading docks. The modeled emission sources are illustrated on Exhibit 2-A.

On-site truck idling was estimated to occur as trucks enter and travel through the facility. Although the Project is required to comply with CARB's idling limit of 5 minutes, staff at SCAQMD recommends that the on-site idling emissions should be estimated for 15 minutes of truck idling (6), which would take into account on-site idling which occurs while the trucks are waiting to pull up to the truck bays, idling at the bays, idling at check-in and check-out, etc. As such, this analysis estimated truck idling at 15 minutes, consistent with SCAQMD's recommendation.

Some of the trucks accessing the site will have Transportation Refrigeration Units (TRUs), emission factors for TRUs were obtained from CARB's Staff Report: Initial Statement of Reasons for Proposed Rulemaking 2011 Amendments for the Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate. Each TRU accessing the site was estimated to idle for 30 minutes with an average of 34 horsepower and 0.53 load factor consistent with CARB guidance. See Appendix 3.1 for more detailed calculations and methodology.

The average number of trucks for the Walmart was obtained from the Project team and is summarized at Table 2-2. Truck trips associated with the additional proposed retail parcels were estimated based on the report Truck Trip Generation Data NCHRP Synthesis 298 (Transportation Research Board, National Research Council 2001) which estimates the daily 2-axle truck at 0.179 trips per 1,000 square feet and semi trucks at 0.084 trips per 1,000 square feet. The total daily truck trips estimated for the additional outparcels is approximately 15 truck trips (10: 2-axle trucks, and 5 semi-trucks, including 1 TRU every other day for the restaurant use).

CHARBROILING COOKING EMISSIONS:

The cooking of meat creates fine particulate matter and volatile organic carbon emissions. Polycyclic Aromatic Hydrocarbons (PAHs), a group of over 100 chemicals, are key TACs from cooking operations. PAHs are formed by the incomplete combustion of coal, petroleum products, wood, tobacco, charbroiled meats, garbage, or other organic materials. Exposure to PAHs usually occurs by breathing air contaminated by wild fires or coal tar, or by eating foods that have been grilled. Cancer is the major concern from exposure to PAH. Epidemiological studies have reported an increase in lung cancer in humans exposed to coke oven emissions, roofing tar emissions, and cigarette smoke; all of these mixtures contain PAH compounds. Two primary components of PAHs are benzo[a]pyrene and naphthalene. Animal studies have reported respiratory tract tumors from inhalation exposure to benzo[a]pyrene and fore-stomach tumors, leukemia, and lung tumors from oral exposure to benzo[a]pyrene. Naphthalene is also a component of cooking emissions which can impact respiratory functions (OEHHA, 2001).

Potential charbroiling emissions may result from the 3,900 s.f. restaurant proposed as part of the Project and potential food services offered at the Walmart store. The quantity and type of food items to be prepared at the proposed Project restaurant have yet-to-be determined. To establish a likely maximum impact scenario, the analysis assumes each modeled facility employs charbroilers for the cooking of beef and poultry. Charbroiling emissions are available from the Guidance for Air Dispersion Modeling (SJVAPCD, 2006), Facility type 3 was selected for both modeled scenarios since it represents the greatest emission rate (most conservative). See Appendix 3.1 for more detailed calculations and methodology.

TABLE 2-2 AVERAGE WEEKLY DELIVERY SCHEDULE

Land Use	Semi-Truck w/ Transportation Refrigeration Unit (TRU)[1]		Semi-Truck w/o TRU[2]					2-Axle	Total Trucks By Category		
	Frozen / Dairy/ Deli	Meat/ Produce	General MDSE	Dry Grocery	McLanes[3]	Coke/ Pepsi	General Ops[4]	DSD[5]	2-Axle	Semi	
										w/ TRU	w/o TRU
Walmart	7	7	10	8	4	2	4	45	45	14	28
Out Parcels	4		1					10	10	4	1
Totals	**18**		**29**					**55**	**55**	**18**	**29**
Total All Trucks									**102**		

Notes:

[1] Merchandise is unloaded on pallets and is stored in the walk-in refrigerator; it takes approximately 30 minutes to unload any given truck. TRU semis typically deliver merchandise between 7 am and 10 pm.

[2] Merchandise is unloaded on pallets and is stored on-site; it takes approximately 30 minutes to unload any given truck. Semi-trucks w/o TRU typically deliver merchandise between 1 pm and 4 pm.

[3] McClanes grocery and foodservice supply company provides delivery services to Walmart.

[4] General Operations include pick-up of contents of trash compactor, cardboard bailer, grocery compost and customer returns. General Operations pickups typically occur between 8 am and 5 pm.

[5] DSD = Direct Service Delivery. Trucks are unloaded using a dolly. Merchandise dollies then enter the store through a DSD door (located inside the outdoor storage area). Deliveries typically occur between 7 am and 5 pm behind the store. Once unloaded, the driver moves the empty truck to a parking space. Coke and Pepsi semis are also DSD-processed.

EXHIBIT 2-A: MODELED EMISSION SOURCES

2.3 EXPOSURE QUANTIFICATION

The analysis herein has been conducted in accordance with the guidelines in the Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis (1). SCAQMD recommends using the Environmental Protection Agency's (U.S. EPA's) AERMOD model. For purposes of this analysis, the model was used to calculate annual average particulate concentrations associated with site operations.

SCAQMD required model parameters are presented in Table 2-3 (7). The model requires additional input parameters including emission data and local meteorology. Meteorological data from the SCAQMD's Lake Elsinore monitoring station (SRA 25) located approximately 4.8 miles northwest of the Project site was used to represent local weather conditions and prevailing winds (8).

TABLE 2-3: AERMOD MODEL PARAMETERS

Dispersion Coefficient (Urban/Rural)	Urban
Terrain (Flat/Complex)	Flat
Averaging Time	1 year
Receptor Height	1.5 meters (consistent with SCAQMD protocol)

Universal Transverse Mercator (UTM) coordinates for North American Datum (NAD) 83 were used to locate the project boundaries, each volume source location, and receptor locations in the project vicinity. The AERMOD dispersion model summary output files for the proposed facility are presented in Appendix 3.1.

Modeled sensitive receptors were placed at discrete residential and non-residential locations for the applicable residential and non-residential scenarios as illustrated on Exhibits 2-B, 2-C, and 2-D.

2.4 CARCINOGENIC CHEMICAL RISK

The SCAQMD CEQA Air Quality Handbook (1993) states that emissions of toxic air contaminants (TACs) are considered significant if a HRA shows an increased risk of greater than ten in one million. Based on guidance from the SCAQMD in the document Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis ((1), for purposes of this analysis, ten (10) in one million is used as the cancer risk threshold for the proposed Project.

Health risks associated with exposure to carcinogenic compounds are defined in terms of the probability of developing cancer as a result of exposure to a chemical at a given concentration. The cancer risk probability is determined by multiplying the chemical's annual concentration by its unit risk factor (URF). The URF is a measure of carcinogenic potential of a chemical when a dose is received through the inhalation pathway. It represents an upper-bound estimate of the probability of contracting cancer as a result of continuous exposure to an ambient concentration of one microgram per cubic meter ($\mu g/m^3$) over a 70 year lifetime. The URF

utilized in this analysis was obtained from the California Environmental Protection Agency, Office of Environmental Health Hazard.

To effectively quantify dose, the procedure requires the incorporation of several discrete exposure variants. Once determined, contaminant dose is multiplied by the cancer potency factor (CPF) in units of inverse dose expressed in milligrams per kilogram per day $(mg/kg/day)^{-1}$ to derive the cancer risk estimate. Therefore, to assess exposures associated with the proposed Project, the following dose algorithm was utilized.

$$CDI = (C_{air} \times EF \times ED \times IR) / (BW \times AT)$$

Where:

CDI = chronic daily intake (mg/kg/day)

C_{air} = concentration of contaminant in air (mg/m^3)

EF = exposure frequency (days/year)

ED = exposure duration (years)

IR = inhalation rate (m^3/day)

BW = body weight (kg)

AT = averaging time (days)

The URFs utilized in the assessment and corresponding cancer potency factors were obtained principally from OEHHA guidance.

Discrete variants for body weight and inhalation were obtained from relevant distribution profiles presented in the OEHHA guidance document entitled Air Toxic Hot Spots Program Risk Assessment Guidelines, Part IV: Technical Support Document for Exposure Assessment and Stochastic Analysis (9). Table 2-4 summarizes the OEHHA-Recommended Exposure Parameters for Residents, Offsite Worker, and School Children. Appendix "3.2" includes the detailed emissions and risk calculation outputs.

The risk estimates were thus calculated as follows:

$$CR_{TAC} = CDI \times CPF \text{ (includes URF)}$$

Where:

CR_{TAC} = cancer risk from TAC exposure

CDI = chronic daily intake (mg/kg/day)

CPF = cancer potency factor

URF = unit risk factor

TABLE 2-4: OEHHA RECOMMENDED EXPOSURE PARAMETERS

Exposure Parameter	Units	Residential	Worker	School Child [a]
Exposure Frequency	days/year	350	245	180
Exposure Duration	years	70	40	9
Inhalation Rate	m^3/day	21.14	10.43	40.67
Body Weight	kilograms	70	70	18
Averaging Time	days	25550	25550	25550
Exposure Time	hours/day	24	12	10

[a] To represent the unique characteristics of the school-based population, the assessment employed the U.S. Environmental Protection Agency's guidance to develop viable dose estimates based on reasonable maximum exposures (RME). RME's are defined as the "highest exposure that is reasonably expected to occur" for a given receptor population. As a result, lifetime risk values for the student population were adjusted to account for an exposure duration of 180 days per year for nine (9) years. The 9 year exposure duration is also consistent with OEHHA Recommendations and consistent with the exposure duration utilized in school-based risk assessments for various schools within the Los Angeles County Unified School District (LAUSD) that have been accepted by the SCAQMD.

Universal Transverse Mercator (UTM) coordinates for North American Datum (NAD) 83 were used to locate the project boundaries, each volume source location, and receptor locations in the project vicinity. The AERMOD dispersion model summary output files for the proposed facility are presented in Appendix 3.1.

Modeled sensitive receptors were placed at discrete residential and non-residential locations for the applicable residential and non-residential scenarios as illustrated on Exhibits 2-B, 2-C, and 2-D.

EXHIBIT 2-B: NEAREST MODELED RESIDENTIAL RECEPTORS

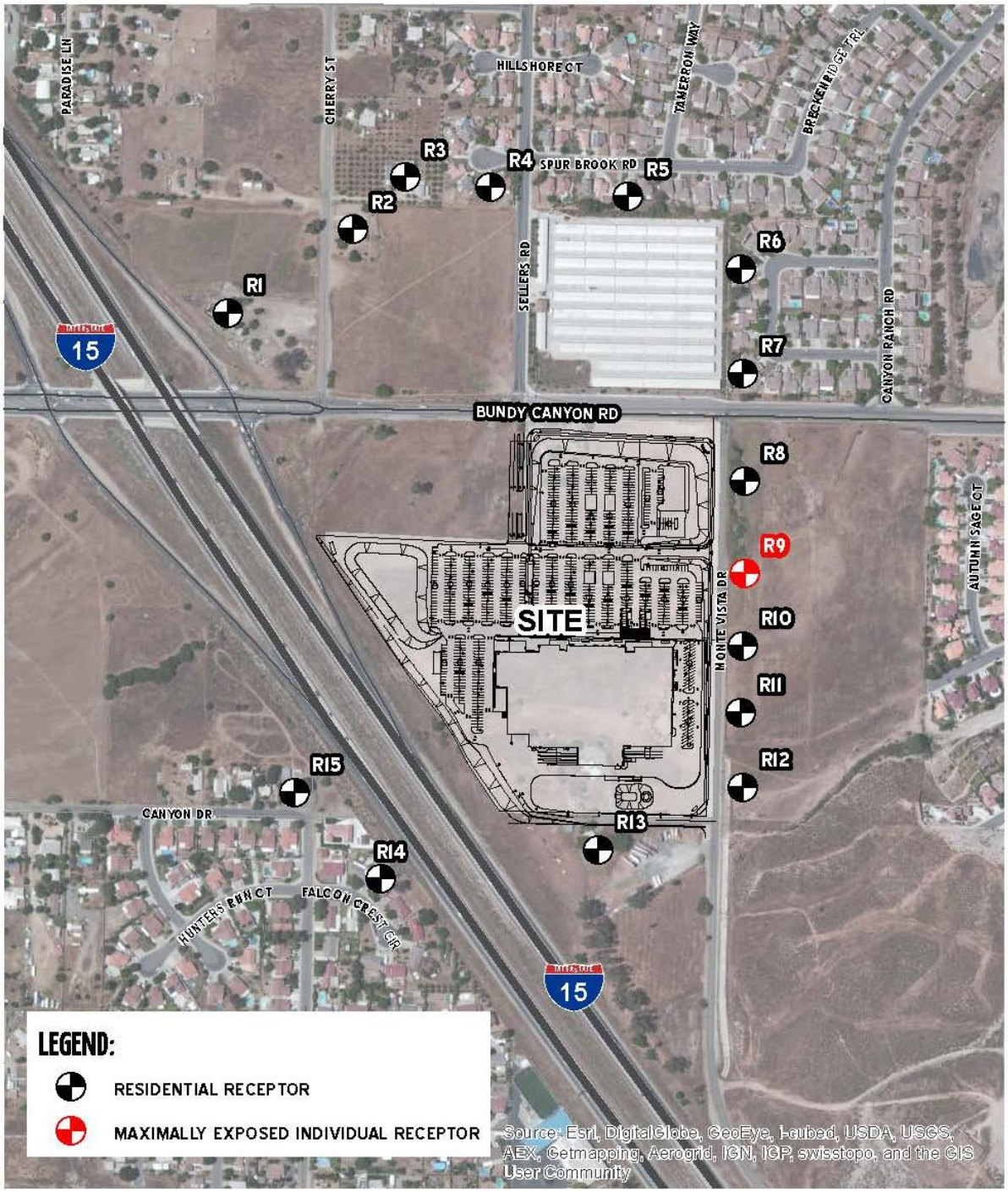


EXHIBIT 2-C: NEAREST MODELED WORKER RECEPTORS

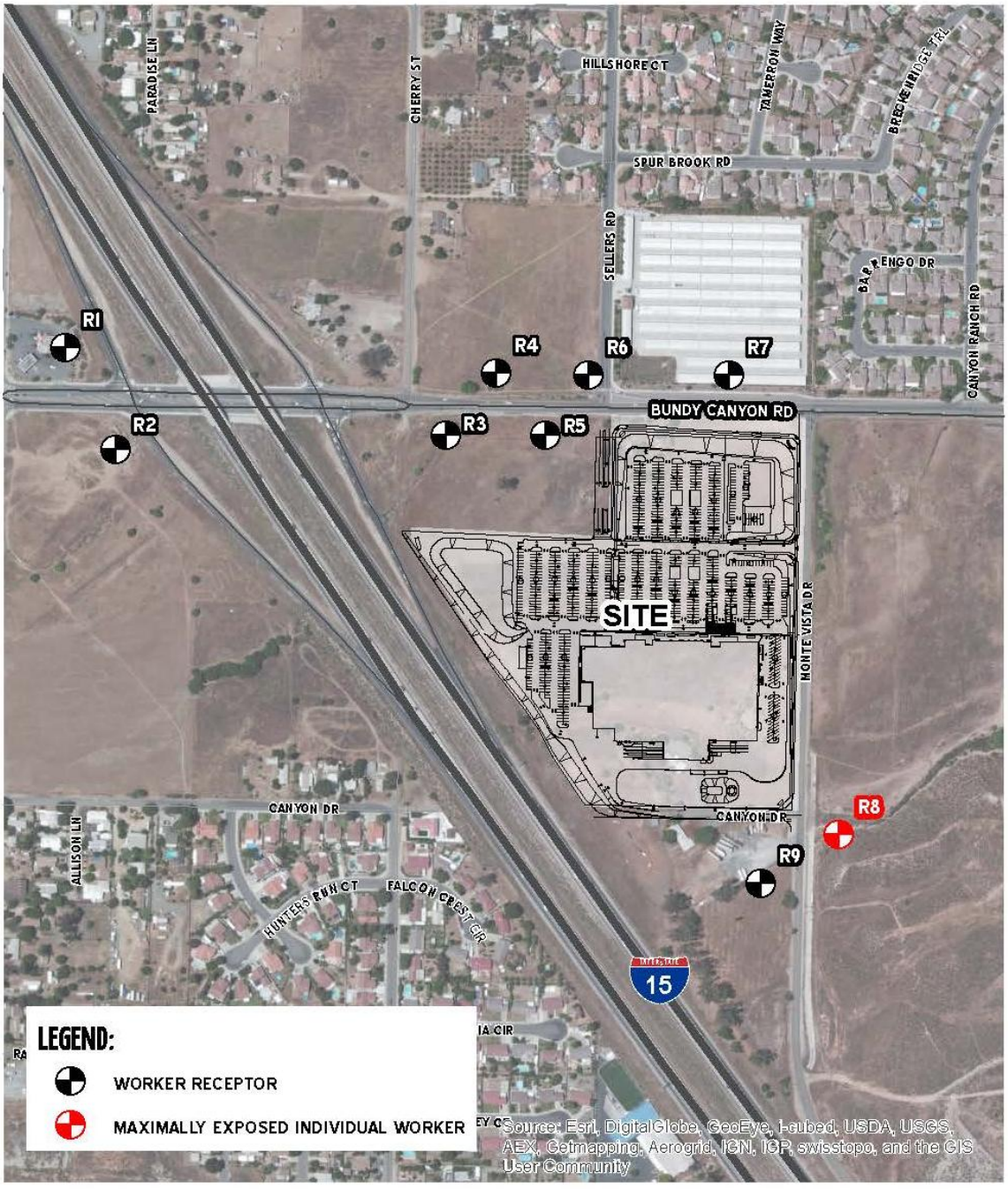


EXHIBIT 2-D: NEAREST MODELED SCHOOL CHILD RECEPTORS

2.5 POTENTIAL PROJECT-RELATED DPM SOURCE CANCER RISKS[3]

Project-related TAC-source cancer risks under the three (3) operational scenarios for the Project are considered herein and are summarized as follows.

Residential Exposure Scenario:

The residential land use with the greatest potential exposure to Project TAC source emissions is located approximately 65 feet east of the Project site across Monte Vista Drive. It should be noted that no residences currently exist at this location however it was included in modeling purposes since this area is zoned residential. At the MEIR, the maximum incremental cancer risk attributable to Project TAC source emissions is estimated at 3.01 in one million, which is less than the threshold of 10 in one million. Exhibit 2-B illustrates the nearest modeled residential receptors and the MEIR.

Worker Exposure Scenario:

The worker receptor land use with the greatest potential exposure to Project TAC source emissions is located approximately 165 feet southeast of the Project site across Monte Vista Drive. At the MEIW, the maximum incremental cancer risk impact at this location is 0.30 in one million which is less than the threshold of 10 in one million. Exhibit 2-C illustrates the nearest modeled worker receptors and the MEIW.

School Child Exposure Scenario:

The school site land use with the greatest potential exposure to Project TAC source emissions is the Cornerstone Christian School located approximately 1,700 feet southeast of the Project site. At the MEISC, the maximum incremental cancer risk impact is 0.02 in one million which are less than the threshold of 10 in one million. Exhibit 2-D illustrates the nearest modeled school child receptors and the MEISC.

2.6 NON-CARCINOGENIC EXPOSURES

An evaluation of the potential noncarcinogenic effects of chronic exposures was also conducted. Adverse health effects are evaluated by comparing a compound's annual concentration with its toxicity factor or Reference Exposure Level (REL). The REL for diesel particulates was obtained from OEHHA for this analysis. The chronic reference exposure level (REL) for DPM was established by OEHHA as 5 $\mu g/m^3$ (OEHHA Toxicity Criteria Database, http://www.oehha.org/risk/chemicaldb/index.asp).

The non-cancer hazard index was calculated (consistent with SCAQMD methodology) as follows:

[3] SCAQMD guidance does not require assessment of the potential health risk to on-site workers. Excerpts from the document OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines—The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (OEHHA 2003), also indicate that it is not necessary to examine the health effects to on-site workers unless required by RCRA (Resource Conservation and Recovery Act) / CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) or the worker resides on-site.

The relationship for the non-cancer health effects of TACs is given by the following equation:

$$HI_{TAC} = C_{TAC}/REL_{TAC}$$

Where:

HI_{TAC} = Hazard Index; an expression of the potential for non-cancer health effects.

C_{TAC} = Annual average TAC concentration ($\mu g/m^3$).

REL_{TAC} = Reference exposure level (REL) for TAC; the TAC concentration at which no adverse health effects are anticipated.

For purposes of this analysis the hazard index for the respiratory endpoint totaled less than one for all receptors in the project vicinity.

Residential Exposure Scenario:

The residential land use with the greatest potential exposure to Project TAC source emissions is located approximately 65 feet east of the Project site across Monte Vista Drive. It should be noted that no residences currently exist at this location however it was included in modeling purposes since this area is zoned residential. At the MEIR the maximum non-cancer risks were estimated to be 0.002, which would not exceed the applicable threshold of 1.0. Exhibit 2-B illustrates the nearest modeled residential receptors and the MEIR.

Worker Exposure Scenario:

The worker receptor land use with the greatest potential exposure to Project TAC source emissions is located approximately 165 feet southeast of the Project site across Monte Vista Drive. At the MEIW the maximum non-cancer risks were estimated to be 0.0004, which would not exceed the applicable threshold of 1.0. Exhibit 2-C illustrates the nearest modeled worker receptors and the MEIW.

School Child Exposure Scenario:

The school site land use with the greatest potential exposure to Project DPM source emissions is located at the Cornerstone Christian School located approximately 1,700 feet southeast of the Project site. At the MEISC the maximum non-cancer risks were estimated to be 0.0001, which would not exceed the applicable threshold of 1.0. Exhibit 2-D illustrates the nearest modeled school receptors and the MEISC.

2.7 CUMULATIVE TOXIC AIR CONTAMINANTS (TAC) EMISSIONS IMPACTS

BACKGROUND

The South Coast Air Quality Management District (SCAQMD)[4] has conducted an analysis of the cumulative effects of Toxic Air Contaminants (TACs) within the South Coast Air Basin (Basin). This cumulative analysis, *Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES-III)*, expresses cumulative TAC impacts in terms of potential increased cancer risks.[5] *MATES-III* estimates that the Basin-wide average excess cancer risk level resulting from exposure to cumulative TACs is approximately 1,200 incidents per one million population. Related, *MATES-III* estimates the cumulative TAC-source cancer risk for the localized area encompassing the Project site at 327 incidents per million population.[6] DPM-source cancer risks, are reflected in the area's ambient cumulative cancer risk along with all other TAC-source risks, and accounts for the predominance (83.6%) of the total risk shown in MATES-III.

AMBIENT TAC IMPACTS PRESUMED CUMULATIVELY SIGNIFICANT

The SCAQMD *has* established a significance threshold for incremental *project-level* TAC impacts. Specifically, if a given project would generate TACs resulting in or causing an increase in cancer risks of 10 or more incidents per million population, that project's incremental cancer risk would be considered significant. This same significance threshold (10 in one million) is applied by SCAQMD in determining whether a given project's incremental contribution to ambient TAC-source cancer risks is cumulatively considerable. The SCAQMD *has not* however established a significance threshold for ambient cumulative TAC impacts affecting the Basin. Likewise, the Lead Agency has no adopted cumulative TAC impacts significance threshold.

Absent an established threshold for cumulative TAC impacts, the following discussion assesses whether, in the light of other available existing information, the ambient cumulative TAC-source impacts affecting the Basin and the area encompassing the Project site could be characterized as significant.

As noted previously, MATES-III estimates the average ambient cumulative TAC-source cancer risk for the Basin as whole at 1,200 incidents per million population; in the localized area encompassing the Project site the risk is estimated at 327 incidents per million population. Either of these existing cumulative TAC-source cancer risk levels (1,200 per million, or 327 per

[4] SCAQMD is the Responsible Agency providing guidance on applicable air quality analysis methodologies and air quality-related issues.

[5] Cancer risk refers to the probability of contracting cancer associated with exposure to a substance. It is expressed as the chance per million of a cancer case occurring. A risk of one per million, for example, would mean that in a population of one million individuals exposed over a 70 year lifetime, one additional cancer case would be expected.

[6] SCAQMD 2008, MATES III Carcinogenic Interactive Map–http://www3.aqmd.gov/webappl/matesiii/ Localized background TAC-source cancer risk estimates are extrapolated from TAC monitoring data collected at ten fixed sites within the South Coast Air Basin. MATES III extrapolates cancer risk levels throughout the Basin at 1.25 mile by 1.25 mile grids.

million) far exceeds the 10 in one million cancer risk at which project-level TAC-source cancer risks would be determined significant employing SCAQMD thresholds.

Comparing the ambient cumulative TAC-source cancer risk (327 per million locally; or 1,200 per million Basin-wide) to the SCAQMD's established threshold for project-level TAC-source cancer risks (10 in one million), the ambient cumulative TAC-source cancer risk is approximately 32.7 to 120 times greater than the incremental risk at which project-level TAC-source cancer risks would be considered significant.

Although there is not yet an established significance threshold for ambient cumulative TAC impacts, given the magnitude by which the ambient cumulative condition exceeds SCAQMD's established project-level significance threshold (ambient cumulative TAC conditions are 32.7 to 120 times greater than the project-level threshold), the ambient cumulative condition would likely exceed whatever significance threshold may be established for cumulative impacts affecting the Basin. On this basis and absent a prevailing threshold adopted by the Lead or Responsible Agency, ambient cumulative TAC impacts are presumed to be significant.

JUSTIFICATION OF THE GEOGRAPHIC SCOPE OF THE ANALYSIS

Proximity to sources of toxics is critical to determining the impact. In traffic-related studies, the additional non-cancer health risk attributable to proximity was seen within 1,000 feet and was strongest within 300 feet. California freeway studies show about a 70-percent drop-off in particulate pollution levels at 500 feet. Based on ARB and South Coast District emissions and modeling analyses, an 80-percent drop-off in pollutant concentrations is estimated at approximately 1,000 feet from a distribution center (10).

The 1,000-foot evaluation distance is supported by research-based findings concerning TAC emission dispersion rates from roadways and large sources showing that emissions diminish substantially between 500 and 1,000 feet from emission sources.

For assessing the cumulative impacts of a new source of TAC emissions associated with a project in combination with existing sources and probable future sources, a project radius is necessary. Assessment of impacts from existing sources within 1,000 feet of the new source in combination with risks and hazards from the new source is recommended. Then, once the location of the maximally impacted receptor is identified for the project, cumulative impacts from other sources within the radius of the project (i.e., not the receptor) are assessed at that location. Assessments should sum individual hazards or risks to find the cumulative impact at the location of the maximally impacted receptor from the new source.

Lastly, the Waters Bill (AB 3205) (H&SC Section, 42301.6 through 42301.9)(11) addresses sources of hazardous air pollutants near schools. It requires new or modified sources of hazardous air emissions located within 1,000 feet from the outer boundary of a school to give public notice to the parents or guardians of children enrolled in any school located within one-quarter mile of the source and to each address within a 1,000 foot radius.

For purposes of this assessment, a one-quarter mile radius or 1,320 feet geographic scope is utilized for determining potential cumulative impacts. This radius is more robust than, and

provides a more health protective scenario for evaluation than the 1,000 feet buffer identified above.

RELATED PROJECTS CONTRIBUTION TO CUMULATIVE TAC IMPACTS

In addition to the MATES-III cumulative TAC-source cancer risk noted above, other new or proposed potential TAC-generating projects (related projects) in the Study Area could contribute to cumulative TAC impacts. These related projects, due to their recent and/or tentative nature, are not reflected in the cumulative TAC impacts identified in the MATES-III study.

In consultation with the Lead Agency, related TAC-generating projects located within a one-quarter mile radius of the Project were identified and are reflected in this cumulative TAC analysis. The related projects listed below were selected based on their propensity to generate TACs that would contribute to, or interact with, TACs generated by the Project. Related projects include:

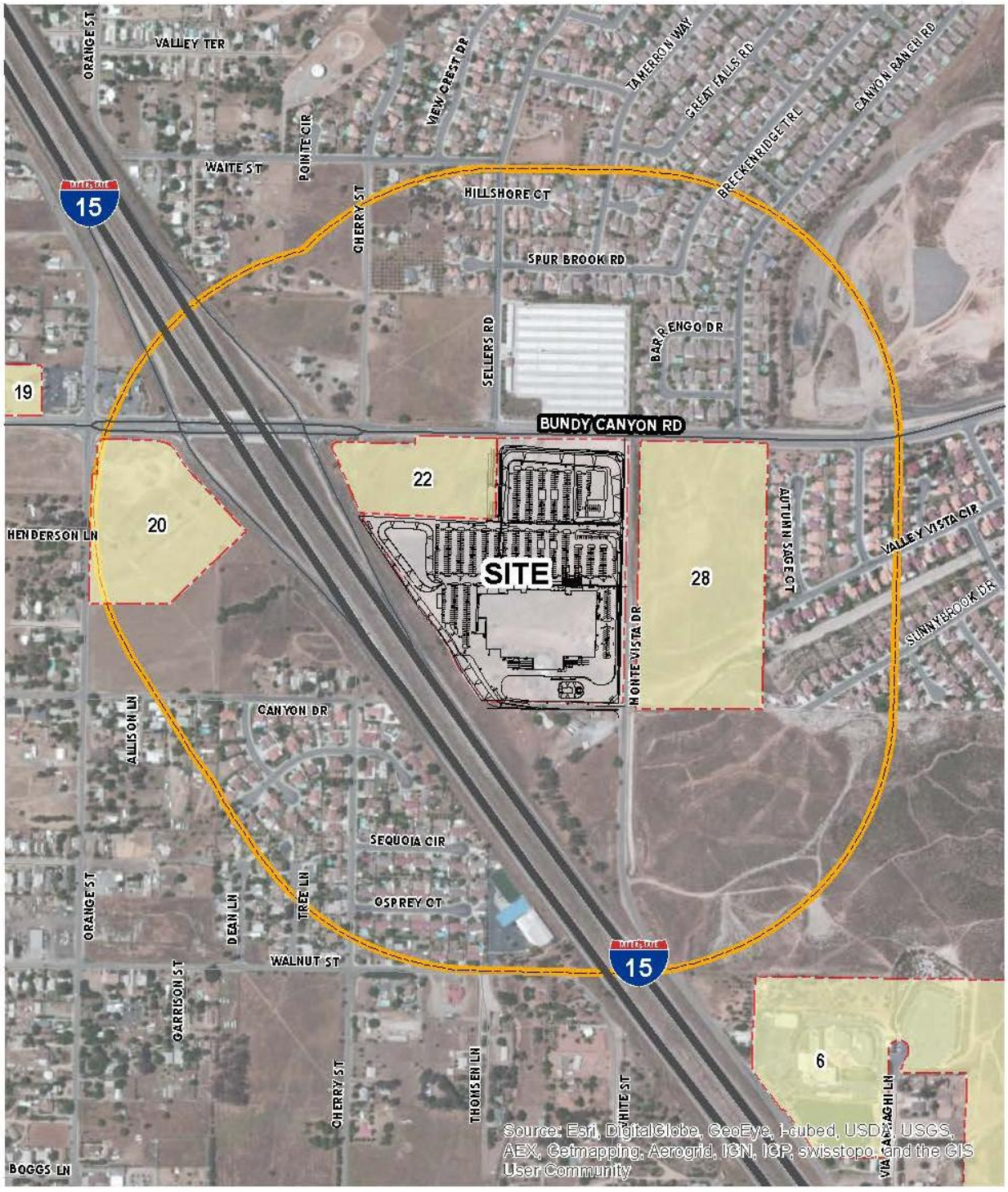
Exhibit 2-E illustrates cumulative projects that are within the one quarter-mile buffer from the Project site. Of the 66 cumulative projects identified within the 52 Traffic Analysis Zones (TAZs)(12), approximately 3 cumulative projects located within 3 TAZs are located within the quarter-mile buffer as follows:

- TAZ 20: Orange Bundy (TPM 30522, APN: 367-100-024, 367-100-026) (79,497 square feet of retail, 1,500 square feet of fast food w/drive thru, 6 VFP gas station w/market).
- TAZ 22: Bundy Canyon Plaza (Case No. 08-0179, TPM 32257, APN: 367-100-019) (33,800 square feet of retail, 6,200 square feet of fast food w/drive thru, 12 VFP gas station w/market).
- TAZ 28: Rancon Monte Vista Residential (TTM No. 31409, APN: 367-110-007, 367-110-008) (126 single family dwelling units).

Of the 3 cumulative projects considered, only two: TAZ 20 and TAZ 22 have the potential to emit TACs. The primary TAC-source emissions associated with these two related projects would be DPM associated with any commercial deliveries and TACs associated with charbroiling cooking emissions and gasoline station emissions.

The City of Wildomar adopted Mitigated Negative Declarations (MNDs) for the Orange Bundy (TAZ 20) Project on July 3, 2013 and the Bundy Canyon Plaza (TAZ 22) Project on July 15, 2009. Both MNDs conclude that the respective projects would not generate any impacts related to TACs that could affect sensitive receptors. However, neither document provides quantified TAC-source emissions and related analysis. It can be inferred however, that given the size of these projects, and based on the analysis provided in the respective MNDs, that there would be a negligible amount of TAC-source emissions that would be generated.

EXHIBIT 2-E: CUMULATIVE DEVELOPMENT WITHIN ONE-QUARTER MILE OF THE PROJECT



LEGEND:

QUARTER-MILE RADIUS

CUMULATIVE DEVELOPMENT

N

PROJECT CONTRIBUTION TO CUMULATIVE TAC IMPACTS

Project-source TACs would incrementally increase the background cancer risk by a maximum of 3.01 incidents per million population. The applicable SCAQMD significance threshold for Project-level TAC-source cancer risk impacts is 10 incidents per million population. Similarly, SCAQMD significance thresholds state that Project contributions to cumulative TAC-source cancer risks would be cumulatively considerable if greater than 10 incidents per million population would occur. The 3.01 incidents per million population increment resulting from the Project is therefore not significant, nor cumulatively considerable.

SUMMARY AND CONCLUSIONS

To provide context for, and quantify cumulative TAC effects within the Study Area, the Project TAC-source cancer risk, and the TAC-source cancer risks from the related projects identified herein, were added to the total background risk derived by the MATES III study, yielding a maximum potential cumulative TAC-source risk affecting the Study Area. As indicated at Table 2-5 the maximum potential cumulative cancer risk within the Study Area is estimated at 330.01.

TABLE 2-5: STUDY AREA CUMULATIVE CANCER RISK[7]

Cumulative Impact Scenario	Risk Sources			Maximum Cumulative Risk
	Background TACs	Related Projects TACs	Project TACs	
	Cancer Risk Per Million Population			
Cumulative Impact Without Project	327			327
Cumulative Impact With Project	327		3.01	330.01
Cumulative Impact With Project and Related Projects	327	negligible	3.01	330.01

Source: **MATES III Carcinogenic Risk Interactive Map (**http://www2.aqmd.gov/webappl/matesiii/) (SCAQMD 2008).

The MATES-III ambient cumulative TAC impact represents approximately 99.1 percent of the total cumulative impact identified at Table 2-5; and due to its magnitude when compared to project-level TAC impact significance thresholds, is presumed to be cumulatively significant. The Project would incrementally contribute to this presumably significant cumulative impact. However the Project's incremental contribution of 3.01 incidents per million population do not exceed, or even approach the established SCAQMD threshold (10 incidents per million

7 Although cumulative impacts typically represent a General Plan Buildout Scenario, there is no such data available for what General Plan Buildout DPM emissions impacts would be. The background risk, however, would likely overstate, rather than understate future DPM impacts and is assumed to be inclusive of future growth. It should be noted that due to improved DPM emissions control technologies and increasingly stringent DPM emissions regulations, the cancer risk incidence in the seven (7) years between the Mates II and Mates III studies declined by approximately 15% even as population and business growth occurred throughout the region. Similar future declines in area-wide DPM source emissions are anticipated pursuant to enactment of further emissions regulations, including but not limited to anticipated greenhouse gas (GHG) reduction and control measures to be implemented by the state (see also: emissions regulatory measures discussed within Wildomar Walmart Air Quality Impact Analysis (Urban Crossroads) 2014; and Wildomar Walmart Greenhouse Gas Impact Analysis (Urban Crossroads) 2014.

population) at which project-level TAC contributions would be determined cumulatively considerable. On this basis, the Project TAC emissions impacts are not considered cumulatively considerable.

3 REFERENCES

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3. —. [Online] August 30, 2007. http://www.arb.ca.gov/msprog/macs/mac0703/mac0703.pdf.
4. **Air Resource Board.** *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.* 2000.
5. **California Department of Transportation.** EMFAC Software. [Online] http://www.dot.ca.gov/hq/env/air/pages/emfac.htm.
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10. **Air Resources Board.** *Air Quality and Land Use Handbook: A Community Health Perspective.* 2005.
11. CAL HSC Code 42301.6 California Code - Section 42301.6. *Find Law.* [Online] http://codes.lp.findlaw.com/cacode/HSC/1/d26/4/4/1/s42301.6.
12. **Urban Crossroads, Inc.** *Wal-Mart 191 Expansion Traffic Impact Analysis.* Irvine : s.n., 2014.

4 CERTIFICATION

The contents of this health risk assessment represent an accurate depiction of the impacts to sensitive receptors associated with the proposed Wildomar Walmart Project. The information contained in this health risk assessment report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 660-1994 ext. 217.

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Master of Science in Environmental Studies
California State University, Fullerton • May, 2010

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PROFESSIONAL AFFILIATIONS

AEP – Association of Environmental Planners
AWMA – Air and Waste Management Association
ASTM – American Society for Testing and Materials

PROFESSIONAL CERTIFICATIONS

Environmental Site Assessment – American Society for Testing and Materials • June, 2013
Planned Communities and Urban Infill – Urban Land Institute • June, 2011
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April, 2008
Principles of Ambient Air Monitoring – California Air Resources Board • August, 2007
AB2588 Regulatory Standards – Trinity Consultants • November, 2006
Air Dispersion Modeling – Lakes Environmental • June, 2006

APPENDIX 5.1:

AERMOD MODEL INPUT/OUTPUT

APPENDIX 5.2:

RISK CALCULATIONS

Wildomar Walmart

GREENHOUSE GAS ANALYSIS

CITY OF WILDOMAR

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APRIL 3, 2014

TABLE OF CONTENTS

APPENDICES

APPENDIX 3.1: CALEEMOD EMISSIONS MODEL OUTPUTS

LIST OF EXHIBITS

LIST OF TABLES

LIST OF ABBREVIATED TERMS

(1)	Reference
ARB	California Air Resources Board
AQIA	Air Quality Impact Analysis
CAA	Federal Clean Air Act
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resource Board
CAT	Climate Action Team
CBSC	California Building Standards Commission
CEC	California Energy Commission
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFC	Chlorofluorocarbons
CFR	Code of Federal Regulations
CH4	Methane
CO	Carbon Monoxide
CO2	Carbon Dioxide
CO2e	Carbon Dioxide Equivalent
CPUC	California Public Utilities Commission
EPA	Environmental Protection Agency
EPS	Emission Performance Standard
GCC	Global Climate Change
GHGA	Greenhouse Gas Analysis
GWP	Global Warming Potential
HFC	Hydrofluorocarbons
LCA	Life-Cycle Analysis
MMs	Mitigation Measures
MMTCO2e	Million Metric Ton of Carbon Dioxide Equivalent
MTCO2e	Metric Ton of Carbon Dioxide Equivalent
N20	Nitrogen Dioxide
NIOSH	National Institute for Occupational Safety and Health
NOx	Oxides of Nitrogen
PFC	Perfluorocarbons
PM10	Particulate Matter 10 microns in diameter or less
PM2.5	Particulate Matter 2.5 microns in diameter or less

PPM	Parts Per Million
Project	Wildomar Walmart
RTP	Regional Transportation Plan
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
UNFCCC	United Nations' Framework Convention on Climate Change
VOC	Volatile Organic Compounds

1 INTRODUCTION

This report presents the results of the greenhouse gas analysis (GHGA) prepared by Urban Crossroads, Inc., for the proposed Wildomar Walmart (referred to as "Project"), which is located south of Bundy Canyon Road and west of Monte Vista Drive in the City of Wildomar as shown on Exhibit 1-A.

The purpose of this GHGA is to evaluate Project-related construction and operational emissions and determine the level of greenhouse gas (GHG) impacts as a result of constructing and operating the proposed Project. This GHGA quantifies the GHG emissions associated with the Project for two scenarios: first, as if no actions to reduce emissions were taken as compared to the assumptions used in preparing the baseline 2020 emissions for the California Air Resources Board Scoping Plan (referred to herein as "Business as Usual") to implement Assembly Bill (AB) 32, and second as designed with applicable design features.

1.1 SITE LOCATION

The Proposed Wildomar Walmart development which is located south of Bundy Canyon Road and west of Monte Vista Drive in the City of Wildomar as shown on Exhibit 1-A. The Project site is currently vacant

1.2 STUDY AREA

The Project site is located within an area developed mostly with residential land uses as shown on Exhibit 1-B. This includes neighboring sensitive receptors within the existing single-family detached residential community located south of the project site, east of the project site across Monte Vista Drive and north across Bundy Canyon Road.

1.3 PROJECT DESCRIPTION

The Project includes the development of approximately a 200,000 square foot Walmart, 3,900 square feet of specialty retail use, and 3,900 square feet of fast-food with drive through window restaurant use as shown on Exhibit 1-C. For the purposes of this analysis, it is assumed that the Project will be constructed and at full occupancy by 2016

1.4 PROJECT SUSTAINABILITY FEATURES

1.4.1 GENERAL

As implemented and operated, the Project will meet or surpass all California Title 24 Energy Efficiency Standards. To this end, the Project will be implemented consistent with established Walmart practices providing for energy efficiency, energy conservation, and use of alternative energy sources (summarized below). Energy-saving and sustainable design features and operational programs incorporated in the Project are summarized and described below. Pursuant to Mitigation Measure AQ-4 presented herein, the Project would be required to demonstrate a minimum 5% improvement on requirements and performance standards

EXHIBIT 1-A: LOCATION MAP

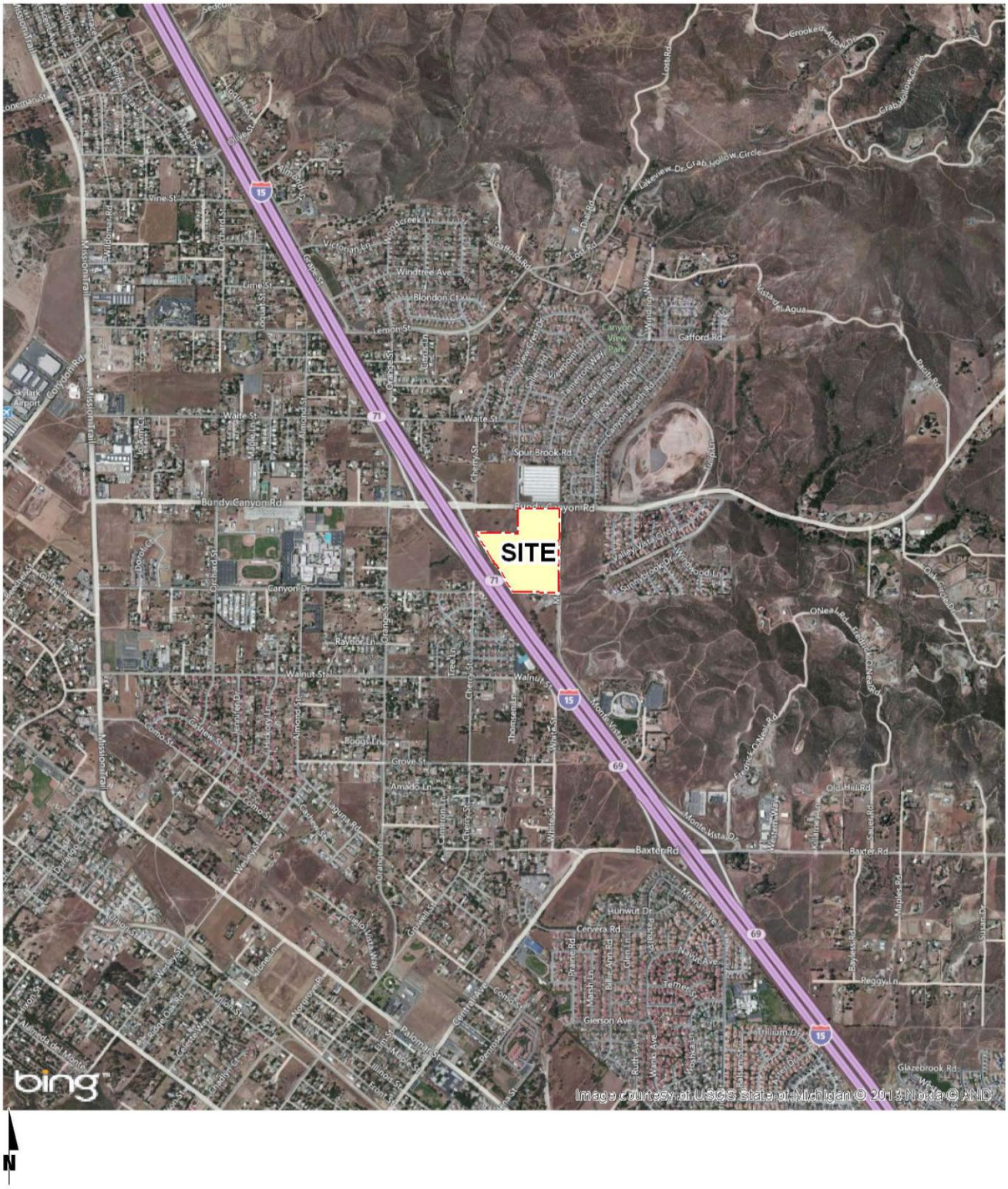
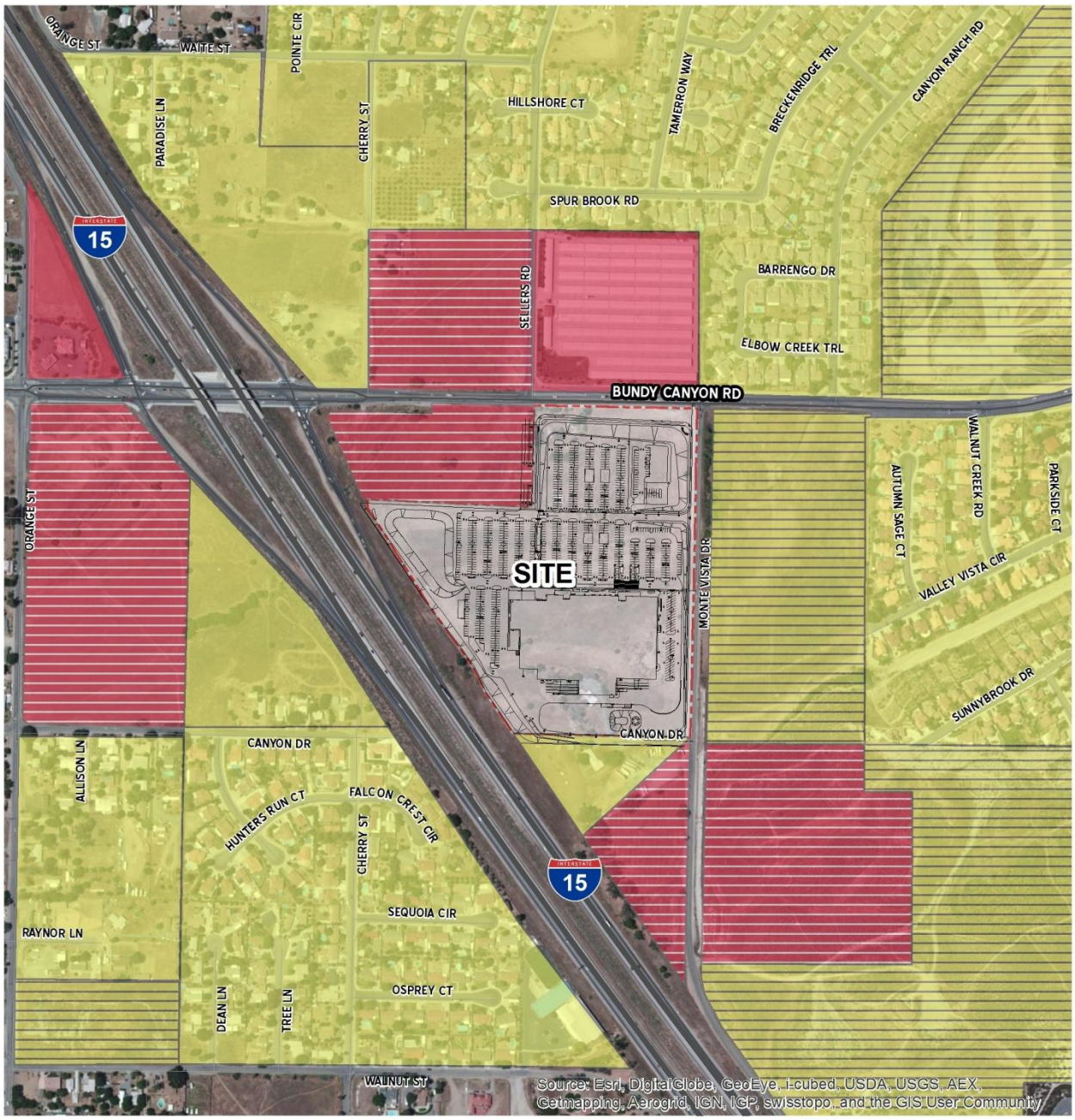


EXHIBIT 1-B: EXISTING LAND USES

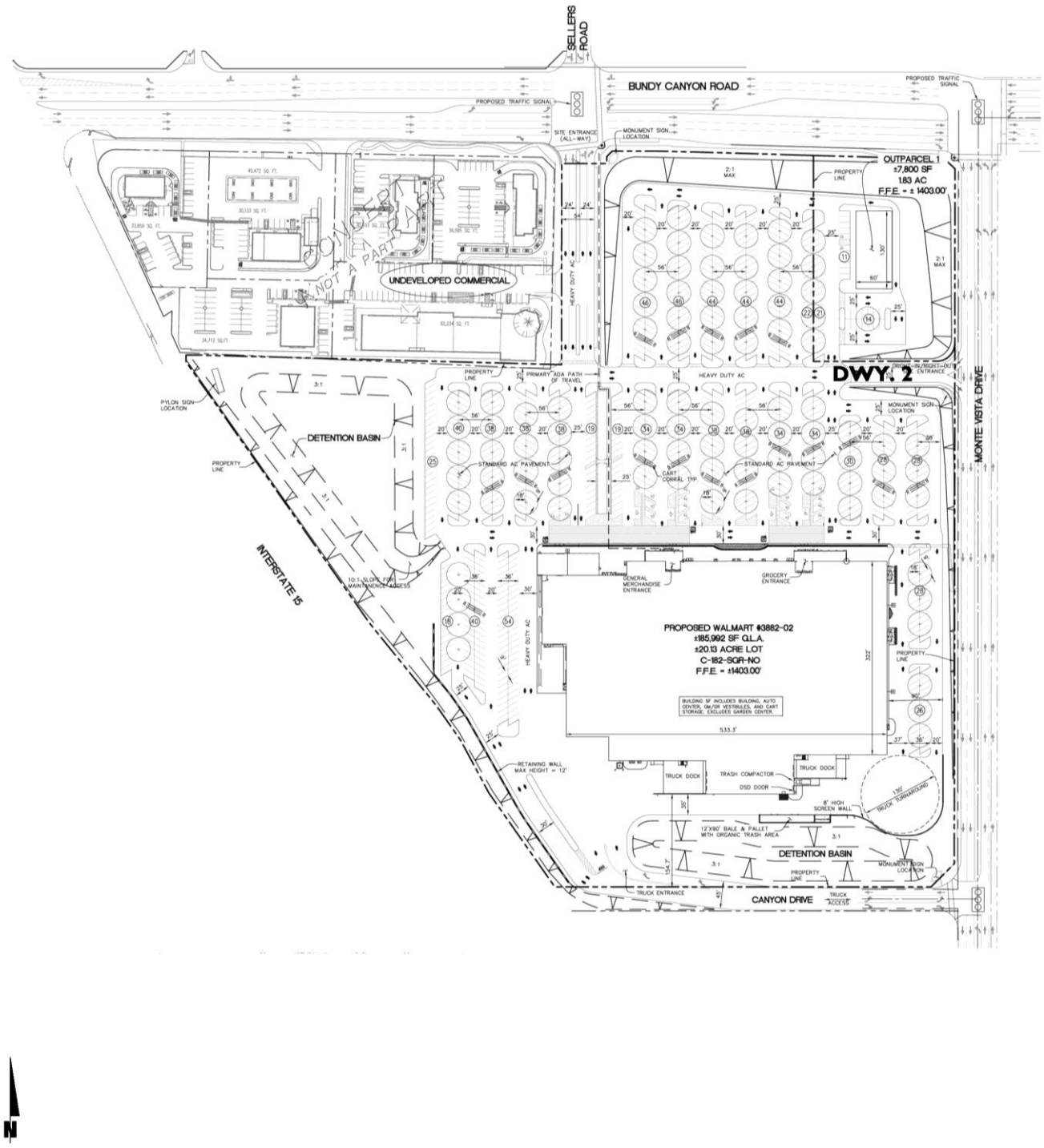


LEGEND:

- COMMERCIAL
- ZONED COMMERCIAL
- RESIDENTIAL
- ZONED RESIDENTIAL

N

EXHIBIT 1-C: PRELIMINARY SITE PLAN



established under the Building Energy Efficiency Standards contained in the California Code of Regulations (CCR), Title 24, Part 6 (Title 24, Title 24 Energy Efficiency Standards).

BUILDING ENERGY AND RESOURCE CONSERVATION

Lighting:

- The entire store would include occupancy sensors in most non-sales areas, including restrooms, break rooms, and offices. The sensors automatically turn the lights off when the space is unoccupied.
- All lighting in the store would consist of T-8 fluorescent lamps and electronic ballasts, resulting in up to a 15 to 20 percent reduction in energy load.
- All exterior building signage and many refrigerated food cases would be illuminated with light emitting diodes (LEDs). In refrigerated food cases, LEDs perform well in the cold and produce less heat (which must be compensated for by the refrigeration equipment) than fluorescent bulbs. LEDs also contain no mercury or lead. LED technology is up to 52 percent more energy efficient than fluorescent lights. Total estimated energy savings for LED lighting in the store's grocery section is approximately 59,000 kWh per year, enough energy to power five single family homes.
- The store would include a daylight harvesting system, which incorporates more efficient lighting, electronic continuous dimming ballasts, skylights and computer controlled daylight sensors that monitor the amount of natural light available. During periods of higher natural daylight, the system dims or turns off the store lights if they are not needed, thereby reducing energy use. This program would help the store save a substantial amount of energy. Dimming and turning off building lights also helps eliminate unnecessary heat in the building.

Central Energy Management System:

- Walmart employs a centralized energy management system (EMS) to monitor and control the heating, air conditioning, refrigeration and lighting systems for all stores from Walmart's corporate headquarters in Bentonville, Arkansas. The EMS enables Walmart to constantly monitor and control the expanded store's energy use, analyze refrigeration temperatures, observe HVAC and lighting performance, and adjust system levels from a central location 24 hours per day, seven days per week. Energy use for the entire store would be monitored and controlled in this manner.

Heating Ventilation and Air Conditioning (HVAC) Systems:

- The store would employ energy efficient heating (HVAC) systems surpassing industry baseline standards and California Title 24 requirements. In this regard, current designs for Walmart stores incorporate HVAC systems rated as among the industry's most energy efficient.

Dehumidification:

- The Walmart store would include a dehumidifying system allowing the store to operate comfortably at a higher interior temperature, use less energy for air conditioning, and allow the air conditioning/refrigeration systems to operate more efficiently.

White Roofs:

- The store would utilize a white membrane roof instead of the typical darker colored roof materials employed in commercial construction. The white membrane roof's higher reflectivity helps reduce building energy consumption and reduces the heat island effect, as compared to buildings utilizing darker roofing colors.

Refrigeration:

- Refrigeration equipment is typically roof-mounted proximate to refrigerated cases. This reduces the amount of copper refrigerant piping, insulation, and minimizes the potential for refrigerant leaks and attendant demands for refrigerant recharging. Walmart uses non ozone-depleting refrigerants (R407a and R410a) for refrigeration equipment and air conditioning, respectively.

Heat Reclamation:

- The proposed Walmart store would reclaim waste heat from onsite refrigeration equipment to supply approximately 70 percent of the hot water needs for the store.

Water Conservation:

- Walmart would install high-efficiency urinals that use only one-eighth (1/8) gallon of water per flush. This fixture reduces water use by 87 percent compared to the conventional one gallon per flush urinal. The 1/8 gallon urinal also requires less maintenance than waterless urinals.
- All restroom sinks would use sensor-activated one-half (1/2) gallon per minute high-efficiency faucets. These faucets reduce water use by approximately 75 percent when compared to mandated 1992 EPA Standards. During use, water flows through turbines built into the faucets to generate the electricity needed to operate the motion sensors.
- Water efficient restroom toilets would be employed in the Walmart restrooms. These fixtures use 20 percent less water compared to mandated EPA Standards of 1.6 gallon per flush fixtures.
    - The toilets utilize built-in water turbines to generate the power required to activate the flush mechanism. These turbines save energy and material by eliminating electrical conduits required to power automatic flush valve sensors.
    - It is estimated that Walmart's water conservation measures could save up to 530,000 gallons of water annually at this store.

Material and Finishes:

Cement Mixes

- The store would be built using cement mixes that include 15 to 20 percent fly ash, a waste product of coal-fired electrical generation, or 25 to 30 percent slag, a by-product of the steel manufacturing process. By incorporating these waste product materials into its cement mixes, Walmart offsets the greenhouse gases emitted in the cement manufacturing process.
- The store would use Non-Reinforced Thermoplastic Panel (NRP) in lieu of Fiber Reinforced Plastic (FRP) sheets on the walls in areas where plastic sheeting is appropriate, including food preparation areas, utility and janitorial areas, and associate break rooms. NRP can be recycled, has better impact resistance and, like FRP, is easy to keep clean.
- The store would employ a plant-based oil extracted from a renewable resource as a concrete form release agent (a product sprayed on concrete forms to allow ease of removal after the concrete has set). This release agent is nonpetroleum based non-toxic and a biodegradable

agent. For the store's exterior and interior field paint coatings, Walmart would use low-volatile organic (VOC) content paint consistent with South Coast Air Quality Management District (SCAQMD) requirements.

- Paint products required for the Project would be primarily purchased in 55 gallon drums and 275 gallon totes, reducing the number of one gallon and five gallon buckets needed. These plastic buckets are filled from the drums and totes and then returned to the paint supplier for cleaning and reuse.
- Exposed concrete floors are used where appropriate thereby reducing surface applied flooring materials. Use of exposed concrete floors also substantially reduces the need for most chemical cleaners, wax strippers, and propane-powered floor buffing.

Recycled Building Materials

- Construction of the store would use steel containing approximately 90 to 98 percent recycled structural steel, which utilizes less energy in the mining and manufacturing process than does new steel.
- All of the plastic baseboards and much of the plastic shelving employed in the store would be composed of recycled plastic.

Construction and Demolition (C&D) Recycling

- Walmart would develop and implement a Construction and Demolition (C&D) program at this location in order to capture and recycle as much of any metals, woods, floor and ceiling tiles, concretes, asphalts and other materials that may be generated as part of Project implementation. Walmart would work with the City and serving waste management company to fully research all available C&D recycling facilities in the area, and the Walmart C&D program would seek to include the widest possible range of materials recovery options. Throughout the course of Project construction, any demolished concrete or asphalt, concrete truck wash out, scrap building materials and construction refuse would be removed and recycled/disposed of consistent with the City's adopted Source Reduction and Recycling Element (SRRE), thereby maximizing reuse of building materials and minimizing recyclables placed within landfills.

1.5 SUMMARY OF FINDINGS

The Project would not generate direct or indirect greenhouse gas emission that would result in a significant impact on the environment

To date, the South Coast Air Quality Management District (SCAQMD) and CARB have not established significance thresholds for GHG emissions under the California Environmental Quality Act (CEQA) [1] or a methodology for quantifying GHG emissions. To evaluate GHG emissions impact significance, GHG emissions that would be generated pursuant to development of the Project area are compared with a GHG emissions "Business as Usual" scenario. This comparison indicates whether GHG emissions generated by development of the Project area would likely be consistent with the CARB Scoping Plan GHG emissions reductions measures and GHG emissions reductions targets. In summary, the Scoping Plan reflects

1 SCAQMD has adopted interim significance thresholds for industrial sources of 10,000 metric tons of carbon dioxide equivalent (CO_2e) per year. The Board adopted these thresholds December 5, 2008. This threshold however was adopted by SCAQMD for projects where it is the lead agency and applies specifically to "industrial" projects.

implementation of measures that would achieve an approximate 28.5% reduction in GHG emissions when compared to GHG emissions produced under a "Business as Usual" scenario (1).

Results of the analysis indicate that the Project GHG emissions would not result in or cause a potentially significant impact on the environment. To this end, the analysis demonstrates that the Project is consistent with, or otherwise not in conflict with, recommended measures and actions in the CARB Scoping Plan. The Scoping Plan establishes strategies and measures to implement in order to achieve the GHG reductions goals set forth in the Global Warming Solutions Act of 2006 (AB 32). As shown in Table 1-1, Project GHG emissions would be reduced by approximately 35.13% when compared to the BAU scenario. This reduction is consistent with the target reduction percentage of 28.5% based on CARB's analysis supporting AB 32.

TABLE 1-1: SUMMARY OF GHG EMISSIONS FOR BAU VS PROJECT

Category	CO2e Emissions	
	BAU	Project
	Metric Tons per Year	
Construction	30.41	30.41
Area	0.03	0.03
Energy Use	1,214.72	733.76
Mobile Sources (Traffic)	11,527.67	7,381.25
Waste Disposed	413.59	413.59
Water Use	110.91	66.48
Total	**13,297.33**	**8,625.51**
Project Improvement over BAU	**35.13%**	

The Project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

Consistency with AB 32

AB 32 requires California to reduce its GHG emissions by approximately 28.5% when compared to GHG emissions produced under a Business as Usual scenario (2). CARB identified reduction measures to achieve this goal as set forth in the CARB Scoping Plan. Thus, projects that are consistent with the CARB Scoping Plan are also consistent with the 28.5% reduction below business as usual required by AB 32.

The Project would generate GHG emissions from a variety of sources which would all emit Carbon Dioxide (CO2), Methane (CH4) and N2O. GHGs could also be indirectly generated by incremental electricity consumption and waste generation from the Project.

As stated previously, the CARB Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of AB 32. The CARB Scoping Plan recommendations serve as statewide measures to reduce GHG emissions levels. Project consistency with applicable CARB Scoping Plan GHG emissions reduction measures is summarized at Table 1-2.

1.6 OTHER REQUIREMENTS

The Project would be required to comply with regulations imposed by the State of California and the South Coast Air Quality Management District aimed at the reduction of air pollutant emissions. Those that are applicable to the Project and that would assist in the reduction of greenhouse gas emissions include:

- Global Warming Solutions Act of 2006 (AB32)(2)
- Regional GHG Emissions Reduction Targets/Sustainable Communities Strategies (SB 375)(3). Supports the State's climate action goals to reduce greenhouse gas (GHG) emissions through coordinated transportation and land use planning with the goal of more sustainable communities.
- Pavely Fuel Efficiency Standards (AB1493). Establishes fuel efficiency ratings for new vehicles (4).
- Title 24 California Code of Regulations (California Building Code). Establishes energy efficiency requirements for new construction (5).
- Title 20 California Code of Regulations (Appliance Energy Efficiency Standards). Establishes energy efficiency requirements for appliances (6).
- Title 17 California Code of Regulations (Low Carbon Fuel Standard). Requires carbon content of fuel sold in California to be 10% less by 2020 (7).
- California Water Conservation in Landscaping Act of 2006 (AB1881). Requires local agencies to adopt the Department of Water Resources updated Water Efficient Landscape Ordinance or equivalent by January 1, 2010 to ensure efficient landscapes in new development and reduced water waste in existing landscapes (8).
- Statewide Retail Provider Emissions Performance Standards (SB 1368). Requires energy generators to achieve performance standards for GHG emissions (9).
- Renewable Portfolio Standards (SB 1078). Requires electric corporations to increase the amount of energy obtained from eligible renewable energy resources to 20 percent by 2010 and 33 percent by 2020 (10).

TABLE 1-2: PROJECT CONSISTENCY WITH SCOPING PLAN GREENHOUSE GAS EMISSION REDUCTION

Scoping Plan Measure	Measure Number	Remarks
Pavley Motor Vehicle Standards (AB 1493)	T-1	Employees and customers would purchase vehicles in compliance with incumbent CARB vehicle standards
Limit High GWP Use in Consumer Products	H-4	Employees and customers would use consumer products that would comply with the incumbent regulations
Motor Vehicle Air Conditioning Systems – Reduction from Non-Professional Servicing	H-1	Employees and customers would be prohibited from performing air conditioning repairs and required to use professional servicing.
Tire Pressure Program	T-4	Motor vehicles driven by employees and customers would maintain proper tire pressure when vehicles are serviced.
Low Carbon Fuel Standard	T-2	Motor vehicles driven by employees and customers would use fuels that are compliant with incumbent standards.
Water Use Efficiency	W-1	Development proposals within the Project site would implement measures to minimize water use and maximize efficiency.
Green Buildings	GB-1	Development proposals within the Project site would be constructed in compliance with incumbent state or local green building standards.
Air Conditioning Refrigerant Leak Test During Vehicle Smog Check	H-5	Motor vehicles driven by employees and customers would comply with the leak test requirements during smog checks.
Energy Efficiency Measures (Electricity)	E-1	The Project would l comply with incumbent electrical energy efficiency standards
Energy Efficiency (Natural Gas)	CR-1	Development proposals within the Project site would comply with incumbent natural gas energy efficiency standards
Greening New Residential and Commercial Construction	GB-1	Development proposals within the Project site s would comply with incumbent green building standards
Greening Existing Homes and Commercial Buildings	GB-1	Development proposals within the Project site would meet retrofit standards as they become effective.

1.7 CONSTRUCTION ACTIVITY MITIGATION MEASURES

The Project Air Quality Impact Analysis (AQIA) establishes construction activity mitigation measures that would globally reduce air pollutant emissions generated by subsequent development proposals within the Project site. Although these measures could act to reduce GHG emissions, there is insufficient data to support any reductions associated with the construction activity mitigation measures identified in the AQIA. Thus, as a conservative measure no reduction in GHG emissions are taken for construction activity mitigation measures identified in the AQIA.

1.8 OPERATIONAL ACTIVITY MITIGATION MEASURES

The Project AQIA establishes operational activity mitigation measures that would globally reduce air pollutant emissions generated by subsequent development proposals within the Project site. These same measures would act to reduce GHG emissions, and are restated here:

MM AQ-4

Prior to the issuance of building permits, the Project applicant shall submit energy usage calculations to the Planning Division showing that the Project is designed to achieve 5% efficiency beyond then incumbent California Building Code Title 24 requirements. Example of measures that reduce energy consumption include, but are not limited to, the following (it being understood that the items listed below are not all required and merely present examples; the list is not all-inclusive and other features that reduce energy consumption also are acceptable):

- Increase in insulation such that heat transfer and thermal bridging is minimized;
- Limit air leakage through the structure and/or within the heating and cooling distribution system;
- Use of energy-efficient space heating and cooling equipment;
- Installation of electrical hook-ups at loading dock areas;
- Installation of dual-paned or other energy efficient windows;
- Use of interior and exterior energy efficient lighting that exceeds then incumbent California Title 24 Energy Efficiency performance standards;
- Installation of automatic devices to turn off lights where they are not needed;
- Application of a paint and surface color palette that emphasizes light and off-white colors that reflect heat away from buildings;
- Design of buildings with “cool roofs” using products certified by the Cool Roof Rating Council, and/or exposed roof surfaces using light and off-white colors;
- Design of buildings to accommodate photo-voltaic solar electricity systems or the installation of photo-voltaic solar electricity systems;
- Installation of ENERGY STAR-qualified energy-efficient appliances, heating and cooling systems, office equipment, and/or lighting products; and/or

MM AQ-5

Enhanced Water Conservation Required: To reduce water demands and associated energy use, subsequent development proposals within the Project site incorporate a Water Conservation Strategy and demonstrate a minimum 30% reduction in outdoor water usage when compared to baseline water demand (total expected water demand without implementation of the Water Conservation Strategy)[2].

Development proposals within the Project site shall also implement the following:

- Landscaping palette emphasizing drought tolerant plants;
- Use of water-efficient irrigation techniques;
- U.S. Environmental Protection Agency (EPA) Certified WaterSense labeled or equivalent faucets, high-efficiency toilets (HETs), and water-conserving shower heads.

2 The analysis includes a reduction of 20% indoor water usage consistent with the current CalGreen Code (11) for residential and non-residential land uses. Per CalGreen, the reduction shall be based on the maximum allowable water use per plumbing fixture and fittings as required by the California Building Standards Code.

2 BACKGROUND

2.1 INTRODUCTION TO GLOBAL CLIMATE CHANGE

Global Climate Change (GCC) is defined as the change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms. GCC is currently one of the most controversial environmental issues in the United States, and much debate exists within the scientific community about whether or not GCC is occurring naturally or as a result of human activity. Some data suggests that GCC has occurred in the past over the course of thousands or millions of years. These historical changes to the Earth's climate have occurred naturally without human influence, as in the case of an ice age. However, many scientists believe that the climate shift taking place since the industrial revolution (1900) is occurring at a quicker rate and magnitude than in the past. Scientific evidence suggests that GCC is the result of increased concentrations of greenhouse gases in the earth's atmosphere, including carbon dioxide, methane, nitrous oxide, and fluorinated gases. Many scientists believe that this increased rate of climate change is the result of greenhouse gases resulting from human activity and industrialization over the past 200 years.

An individual project like the Project evaluated in this GHGA cannot generate enough greenhouse gas emissions to effect a discernible change in global climate. However, the Project may participate in the potential for GCC by its incremental contribution of greenhouse gasses combined with the cumulative increase of all other sources of greenhouse gases, which when taken together constitute potential influences on GCC. Because these changes may have serious environmental consequences, Section 3.0 evaluates the potential for the Project to have a significant effect upon the environment as a result of its potential contribution to the greenhouse effect.

2.2 GREENHOUSE GAS EMISSIONS INVENTORIES

Global

Worldwide anthropogenic (man-made) GHG emissions are tracked by the Intergovernmental Panel on Climate Change for industrialized nations (referred to as Annex I) and developing nations (referred to as Non-Annex I). Man-made GHG emissions data for Annex I nations are available through 2011. For the Year 2011 the sum of these emissions totaled approximately 25,285,543 gigagrams (Gg) Carbon Dioxide Equivalent ($CO2e^3$)(11) (12). The GHG emissions in more recent years may differ from the inventories presented in Table 2-1; however, the data is representative of currently available inventory data.

[3] The global emissions are the sum of Annex I and non-Annex I countries, without counting Land-Use, Land-Use Change and Forestry (LULUCF). For countries without 2005 data, the UNFCCC data for the most recent year were used. United Nations Framework Convention on Climate Change, "Annex I Parties – GHG total without LULUCF,"

United States

As noted in Table 2-1, the United States, as a single country, was the number two producer of GHG emissions in 2011. The primary greenhouse gas emitted by human activities in the United States was CO2, representing approximately 83 percent of total greenhouse gas emissions (13). Carbon dioxide from fossil fuel combustion, the largest source of US greenhouse gas emissions, accounted for approximately 78 percent of the GHG emissions.

TABLE 2-1: TOP GHG PRODUCER COUNTRIES AND THE EUROPEAN UNION[4]

Emitting Countries	GHG Emissions (Gg CO2e)
China	8,715,307
United States	6,665,700
European Union (27 member countries)	4,550,212
Russian Federation	2,320,834
India	1,725,762
Japan	1,307,728
Total	**25,285,543**

State of California

CARB compiles GHG inventories for the State of California. Based upon the 2008 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2008 greenhouse gas emissions inventory, California emitted 474 Million Metric Ton of Carbon Dioxide Equivalent (MMTCO2e) including emissions resulting from imported electrical power in 2008 (14). Based on the CARB inventory data and GHG inventories compiled by the World Resources Institute (15), California's total statewide GHG emissions rank second in the United States (Texas is number one) with emissions of 417 MMTCO2e excluding emissions related to imported power.

2.3 GLOBAL CLIMATE CHANGE DEFINED

Global Climate Change refers to the change in average meteorological conditions on the earth with respect to temperature, wind patterns, precipitation and storms. Global temperatures are regulated by naturally occurring atmospheric gases such as water vapor, CO2 (Carbon Dioxide), N2O (Nitrous Oxide), CH4 (Methane), hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. These particular gases are important due to their residence time (duration they stay) in the atmosphere, which ranges from 10 years to more than 100 years. These gases allow solar radiation into the Earth's atmosphere, but prevent radioactive heat from escaping, thus warming the Earth's atmosphere. GCC can occur naturally as it has in the past with the previous ice ages. According to the California Air Resources Board (CARB), the climate change since the industrial revolution differs from previous climate changes in both rate and magnitude (16).

Gases that trap heat in the atmosphere are often referred to as greenhouse gases. Greenhouse gases are released into the atmosphere by both natural and anthropogenic (human) activity.

[4] Used http://unfccc.int data for Annex I countries. Consulted the http://www.eia.gov site to reference Non-Annex I countries such as China and India.

Without the natural greenhouse gas effect, the Earth's average temperature would be approximately 61° Fahrenheit (F) cooler than it is currently. The cumulative accumulation of these gases in the earth's atmosphere is considered to be the cause for the observed increase in the earth's temperature.

Although California's rate of growth of greenhouse gas emissions is slowing, the state is still a substantial contributor to the U.S. emissions inventory total. In 2004, California is estimated to have produced 492 million gross metric tons of carbon dioxide equivalent (CO2e) greenhouse gas emissions. Despite a population increase of 16 percent between 1990 and 2004, California has significantly slowed the rate of growth of greenhouse gas emissions due to the implementation of energy efficiency programs as well as adoption of strict emission controls(15).

2.4 GREENHOUSE GASES

For the purposes of this analysis, emissions of carbon dioxide, methane, and nitrous oxide were evaluated (see Table 3-2 later in this report) because these gasses are the primary contributors to GCC from development projects. Although other substances such as fluorinated gases also contribute to GCC, sources of fluorinated gases are not well-defined and no accepted emissions factors or methodology exist to accurately calculate these gases.

Greenhouse gases have varying global warming potential values; Global Warming Potential (GWP) values represent the potential of a gas to trap heat in the atmosphere. Carbon dioxide is utilized as the reference gas for GWP, and thus has a GWP of 1.

The atmospheric lifetime and GWP of selected greenhouse gases are summarized at Table 2-2. As shown in the table below, GWP range from 1 for carbon dioxide to 23,900 for sulfur hexafluoride.

Water Vapor: Water vapor (H20) is the most abundant, important, and variable greenhouse gas 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. A climate feedback is an indirect, or secondary, change, either positive or negative, that occurs within the climate system in response to a forcing mechanism. 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 would continue is unknown as there are also dynamics that hold the positive feedback loop in check.

TABLE 2-2: GLOBAL WARMING POTENTIAL AND ATMOSPHERIC LIFETIME OF SELECT GHGS

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310
HFC-23	264	11,700
HFC-134a	14.6	1,300
HFC-152a	1.5	140
PFC: Tetrafluoromethane (CH4)	50,000	6,500
PFC: Hexafluoroethane (C2F6)	10,000	9,200
Sulfur Hexafluoride (SF6)	3,200	23,900
Source: Environmental Protection Agency (EPA) 2006 (URL: http://www.epa.gov/nonco2/econ-inv/table.html)		

As an example, when water vapor increases in the atmosphere, more of it would 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 human 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: Carbon dioxide (CO2) 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 (17).

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, CO2 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(18).

Methane: Methane (CH4) 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: Nitrous oxide (N2O), also known as laughing gas, is a colorless greenhouse gas. 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) (19).

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: Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in methane or ethane (C2H6) 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 would remain in the atmosphere for over 100 years.

Hydrofluorocarbons: Hydrofluorocarbons (HFCs) are synthetic, man-made chemicals that are used as a substitute for CFCs. Out of all the greenhouse gases, 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 (CHF3), HFC-134a (CF3CH2F), and HFC-152a (CH3CHF2). 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 (20). No health effects are known to result from exposure to HFCs, which are manmade for applications such as automobile air conditioners and refrigerants.

Perfluorocarbons: Perfluorocarbons (PFCs) have stable molecular structures and do not break down through 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 (CF4) and hexafluoroethane (C2F6). The U.S. EPA estimates that concentrations of CF4 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.

Sulfur Hexafluoride: Sulfur hexafluoride (SF6) is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It also has the highest GWP of any gas evaluated (23,900). The U.S. EPA indicates that concentrations in the 1990s were about 4 ppt. In high concentrations in confined areas, the gas presents the hazard of suffocation because it displaces the oxygen needed for breathing.

Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

2.5 EFFECTS OF CLIMATE CHANGE IN CALIFORNIA

The California Environmental Protection Agency (CalEPA) published a report titled "Scenarios of Climate Change in California: An Overview" (Climate Scenarios report) in February 2006 (California Climate Change Center 2006), that while not adequate for a CEQA project-specific or cumulative analysis, is generally instructive about the statewide impacts of global warming.

The Climate Scenarios report uses a range of emissions scenarios developed by the Intergovernmental Panel on Climate Change (IPCC) to project a series of potential warming ranges (i.e., temperature increases) that may occur in California during the 21st century: lower warming range (3.0-5.5^{o}F); medium warming range (5.5-8.0^{o}F); and higher warming range (8.0-10.5^{o}F). The Climate Scenarios report then presents an analysis of future climate in California under each warming range, that while uncertain, present a picture of the impacts of global climate change trends in California.

In addition, most recently on August 5, 2009, the State's Natural Resources Agency released a public review draft of its "California Climate Adaptation Strategy" report that details many vulnerabilities arising from climate change with respect to matters such as temperature extremes, sea level rise, wildfires, floods and droughts and precipitation changes. This report responds to the Governor's Executive Order S-13-2008 that called on state agencies to develop California's strategy to identify and prepare for expected climate impacts

According to the reports, substantial temperature increases arising from increased GHG emissions potentially could result in a variety of impacts to the people, economy, and environment of California associated with a projected increase in extreme conditions, with the severity of the impacts depending upon actual future emissions of GHGs and associated warming. Under the emissions scenarios of the Climate Scenarios report, the impacts of global warming in California have the potential to include, but are not limited to, the following areas:

Air Quality/General Thermal Effects

According to Cal EPA, higher temperatures may increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation could increase from 25 to 35 percent under the lower warming range to 75 to 85 percent under the medium warming range. In addition, if global background ozone levels increase as predicted in some scenarios, it may become difficult to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances, depending on wind conditions. The Climate Scenarios report indicates that large wildfires could become more frequent if GHG emissions are not significantly reduced.

In addition, under the higher warming range scenario, there could be up to 100 more days per year with temperatures above 90^{o}F in Los Angeles and 95^{o}F in Sacramento by 2100. This is a large increase over historical patterns and approximately twice the increase projected if temperatures remain within or below the lower warming range. Rising temperatures could increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

Water Resources

A vast network of man-made reservoirs and aqueducts captures and transports water throughout the state from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages.

If temperatures continue to increase, more precipitation could fall as rain instead of snow, and the snow that does fall could melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. Under the lower warming range scenario, snowpack losses could be only half as large as those possible if temperatures were to rise to the higher warming range. How much snowpack could be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snowpack could pose challenges to water managers and hamper hydropower generation. It could also adversely affect winter tourism. Under the lower warming range, the ski season at lower elevations could be reduced by as much as a month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing and snowboarding.

The State's water supplies are also at risk from rising sea levels. An influx of saltwater could degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta – a major fresh water supply.

Agriculture

Increased temperatures could cause widespread changes to the agriculture industry reducing the quantity and quality of agricultural products statewide. First, California farmers could possibly lose as much as 25 percent of the water supply they need. Although higher CO2 levels can stimulate plant production and increase plant water-use efficiency, California's farmers could face greater water demand for crops and a less reliable water supply as temperatures rise. Crop growth and development could change, as could the intensity and frequency of pest and disease outbreaks. Rising temperatures could aggravate O3 pollution, which makes plants more susceptible to disease and pests and interferes with plant growth.

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than-optimal development for many crops, so rising temperatures could worsen the quantity and quality of yield for a number of California's agricultural products. Products likely to be most affected include wine grapes, fruits and nuts.

In addition, continued global climate change could shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion could occur in many species while range contractions may be less likely in rapidly evolving species with significant populations already established. Should range contractions occur, new or different weed species could fill the emerging gaps. Continued global climate change could alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates.

Forests and Landscapes

Global climate change has the potential to intensify the current threat to forests and landscapes by increasing the risk of wildfire and altering the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55 percent, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the state. In contrast, wildfires in northern California could increase by up to 90 percent due to decreased precipitation.

Moreover, continued global climate change has the potential to alter natural ecosystems and biological diversity within the state. For example, alpine and subalpine ecosystems could decline by as much as 60 to 80 percent by the end of the century as a result of increasing temperatures. The productivity of the state's forests has the potential to decrease as a result of global climate change.

Rising Sea Levels

Rising sea levels, more intense coastal storms, and warmer water temperatures could increasingly threaten the state's coastal regions. Under the higher warming range scenario, sea level is anticipated to rise 22 to 35 inches by 2100. Elevations of this magnitude would inundate low-lying coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats. Under the lower warming range scenario, sea level could rise 12-14 inches.

2.6 HUMAN HEALTH EFFECTS

The potential health effects related directly to the emissions of carbon dioxide, methane, and nitrous oxide as they relate to development projects such as the Project are still being debated in the scientific community. Their cumulative effects to global climate change have the potential to cause adverse effects to human health. Increases in Earth's ambient temperatures would result in more intense heat waves, causing more heat-related deaths. Scientists also purport that higher ambient temperatures would increase disease survival rates and result in more widespread disease. Climate change would likely cause shifts in weather patterns, potentially resulting in devastating droughts and food shortages in some areas (21). Exhibit 2-A presents the potential impacts of global warming.

Water Vapor: There are no known direct health effects related to water vapor at this time. It should be noted however that when some pollutants react with water vapor, the reaction forms a transport mechanism for some of these pollutants to enter the human body through water vapor.

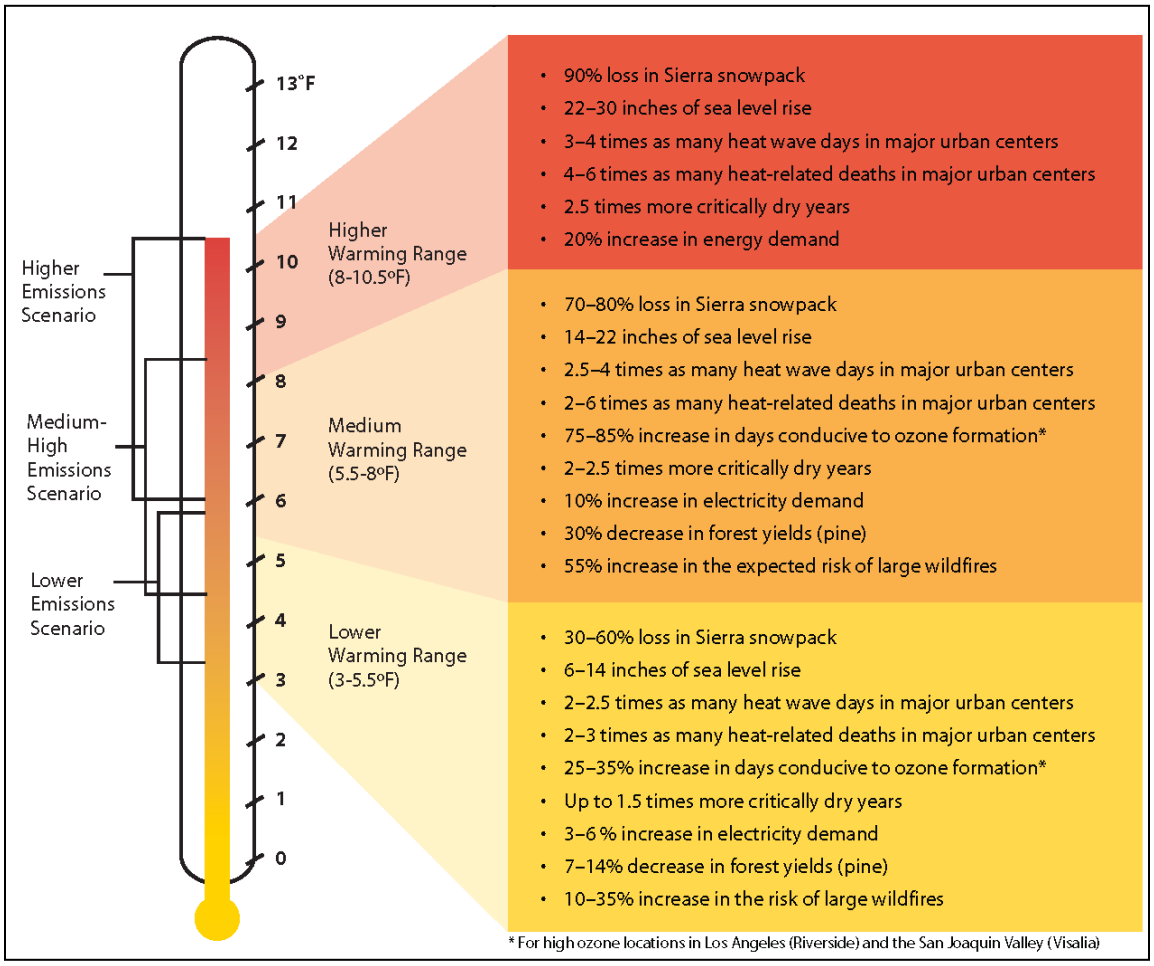
Carbon Dioxide: According to the National Institute for Occupational Safety and Health (NIOSH) high concentrations of carbon dioxide can result in health effects such as: headaches, dizziness, restlessness, difficulty breathing, sweating, increased heart rate, increased cardiac output, increased blood pressure, coma, asphyxia, and/or convulsions. It should be noted that current concentrations of carbon dioxide in the earth's atmosphere are estimated to be approximately 370 parts per million (ppm), the actual reference exposure level (level at which adverse health effects typically occur) is at exposure levels of 5,000 ppm averaged over 10 hours in a 40-hour workweek and short-term reference exposure levels of 30,000 ppm averaged over a 15 minute period (22).

Specific health effects associated with directly emitted GHG emissions are as follows:

Methane: Methane is extremely reactive with oxidizers, halogens, and other halogen-containing compounds. Methane is also an asphyxiant and may displace oxygen in an enclosed space (23).

Nitrous Oxide: Nitrous Oxide is often referred to as laughing gas; it is a colorless greenhouse gas. The health effects associated with exposure to elevated concentrations of nitrous oxide include dizziness, euphoria, slight hallucinations, and in extreme cases of elevated concentrations nitrous oxide can also cause brain damage(23).

EXHIBIT 2-A: SUMMARY OF PROJECTED GLOBAL WARMING IMPACT, 2070-2099 (AS COMPARED WITH 1961-1990)



Fluorinated Gases: High concentrations of fluorinated gases can also result in adverse health effects such as asphyxiation, dizziness, headache, cardiovascular disease, cardiac disorders, and in extreme cases, increased mortality (22).

Aerosols: The health effects of aerosols are similar to that of other fine particulate matter. Thus aerosols can cause elevated respiratory and cardiovascular diseases as well as increased mortality (24).

2.7 REGULATORY SETTING

International Regulation and the Kyoto Protocol:

In 1988, the United Nations established the Intergovernmental Panel on Climate Change to evaluate the impacts of global warming and to develop strategies that nations could implement to curtail global climate change. In 1992, the United States joined other countries around the world in signing the United Nations' Framework Convention on Climate Change (UNFCCC) agreement with the goal of controlling greenhouse gas emissions. As a result, the Climate

Change Action Plan was developed to address the reduction of GHGs in the United States. The Plan currently consists of more than 50 voluntary programs for member nations to adopt.

The Kyoto protocol is a treaty made under the UNFCCC and was the first international agreement to regulate GHG emissions. Some have estimated that if the commitments outlined in the Kyoto protocol are met, global GHG emissions could be reduced an estimated five percent from 1990 levels during the first commitment period of 2008-2012. Notably, while the United States is a signatory to the Kyoto protocol, Congress has not ratified the Protocol and the United States is not bound by the Protocol's commitments. In December 2009, international leaders from 192 nations met in Copenhagen to address the future of international climate change commitments post-Kyoto.

Federal Regulation and the Clean Air Act:

Coinciding 2009 meeting in Copenhagen, on December 7, 2009, the U.S. Environmental Protection Agency issued an Endangerment Finding under Section 202(a) of the Clean Air Act, opening the door to federal regulation of GHGs. The Endangerment Finding notes that GHGs threaten public health and welfare and are subject to regulation under the Clean Air Act. To date, the EPA has not promulgated regulations on GHG emissions, but it has already begun to develop them.

Previously the EPA had not regulated GHGs under the Clean Air Act (25) 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. In Massachusetts v. Environmental Protection Agency et al. (127 S. Ct. 1438 (2007), however, the U.S. Supreme Court held that GHGs are pollutants under the Clean Air Act and directed the EPA to decide whether the gases endangered public health or welfare. The EPA had also not moved aggressively to regulate GHGs because it expected Congress to make progress on GHG legislation, primarily from the standpoint of a cap-and-trade system. However, proposals circulated in both the House of Representative and Senate have been controversial and it may be some time before the U.S. Congress adopts major climate change legislation. The EPA's Endangerment Finding paves the way for federal regulation of GHGs with or without Congress.

Although global climate change did not become an international concern until the 1980s, efforts to reduce energy consumption began in California in response to the oil crisis in the 1970s, resulting in the unintended reduction of greenhouse gas emissions. In order to manage the state's energy needs and promote energy efficiency, AB 1575 created the California Energy Commission (CEC) in 1975.

Title 24 Energy Standards:

The California Energy Commission first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (5) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally intended to reduce GHG emissions, increased energy efficiency, and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the

standard. The standards are updated periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods. The latest revisions were adopted in 2008 and became effective on January 1, 2010.

Part 11 of the Title 24 Building Standards Code is referred to as the California Green Building Standards Code (CALGreen Code) (26). The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4) Material conservation and resource efficiency; and (5) Environmental air quality." The CALGreen Code is not intended to substitute or be identified as meeting the certification requirements of any green building program that is not established and adopted by the California Building Standards Commission (CBSC). The CBSC has released the 2010 California Green Building Standards Code on its Web site. Unless otherwise noted in the regulation, all newly constructed buildings in California are subject of the requirements of the CALGreen Code.

CALGreen contains both mandatory and voluntary measures, for Non-Residential land uses there are 39 mandatory measures including, but not limited to: exterior light pollution reduction, wastewater reduction by 20%, and commissioning of projects over 10,000 sf. There are two tiers of voluntary measures for Non-Residential land uses for a total of 36 additional elective measures.

California's Building Energy Efficiency Standards are updated on an approximately three-year cycle. The 2013 Standards will continue to improve upon the current 2008 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings. The 2013 Building Energy Efficiency Standards are 25 percent more efficient than previous standards for residential construction and 30 percent better for nonresidential construction. The Standards, which take effect on January 1, 2014, offer builders better windows, insulation, lighting, ventilation systems and other features that reduce energy consumption in homes and businesses.

Vehicle Standards

Other regulations have been adopted to address vehicle standards including United States Environmental Protection Agency (USEPA) and National Highway Traffic Safety Administration (NHTSA) joint rulemaking for vehicle standards:

- On March 30, 2009, the NHTSA issued a final rule for model year 2011 (27).
- On May 7, 2010, the USEPA and NHTSA issued a Supplemental Notice of Intent announcing plans to propose stringent, coordinated federal greenhouse gas and fuel economy standards for model year 2017-2025 light-duty vehicles (28)
- On August 9, 2011 USEPA and NHTSA issued a Supplemental Notice of Intent announcing plans to propose stringent, coordinated federal greenhouse has and fuel economy standards for model year 2017-2025 light-duty vehicles (29)
- The NHSTA intends to set standards for model years 2022-2025 in a future rulemaking (30)

- In addition to the regulations applicable to cars and light-duty trucks, on August 9, 2011, the USEPA and the NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks, which applies to vehicles from model year 2014–2018 (31)

Energy Independence and Security Act

On December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law (32). Among other key measures, the Act would do the following, which would aid in the reduction of national GHG emissions, both mobile and non-mobile.

Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) Guidelines on GHG

On February 18, 2010, the White House Council on Environmental Quality published draft guidance on the consideration of greenhouse gases and climate change for NEPA analyses (33). It recommends that proposed federal actions that are reasonably expected to directly emit 25,000 metric tons of CO2e/year should prepare a quantitative and qualitative NEPA analysis of direct and indirect greenhouse gas emissions.

The draft guidance provides reporting tools and instructions on how to assess the effects of climate change. The draft guidance does not apply to land and resource management actions, nor does it propose to regulate greenhouse gases. Although CEQ has not yet issued final guidance, various NEPA documents are beginning to incorporate the approach recommended in the draft guidance(34)

Other Applicable Regulations and Policies

In addition to the federal regulations and programs described above, there are still more policies and programs to address climate change. A database compiled by the International Energy Agency lists more than 300 policies and measures addressing climate change in the United States (35).

The Western Regional Climate Action Initiative (WCI)

The Western Regional Climate Action Initiative (WCI) is a partnership among seven states, including California, and four Canadian provinces to implement a regional, economy-wide cap-and-trade system to reduce global warming pollution. The WCI will cap GHG emissions from the region's electricity, industrial, and transportation sectors with the goal to reduce the heat trapping emissions that cause global warming to 15% below 2005 levels by 2020. When the WCI adopted this goal in 2007, it estimated that this would require 2007 levels to be reduced worldwide between 50% and 85% by 2050. California is working closely with the other states and provinces to design a regional GHG reduction program that includes a cap-and-trade approach. Air Resource Board's (ARB) planned cap and-trade program, discussed below, is also intended to link California and the other member states and provinces.

California Assembly Bill No. 1493 (AB 1493):

AB 1493 requires CARB to develop and adopt the nation's first greenhouse gas emission standards for automobiles. The Legislature declared in AB 1493 that global warming was a

matter of increasing concern for public health and environment in California (4). Further, the legislature stated that technological solutions to reduce greenhouse gas emissions would stimulate the California economy and provide jobs.

To meet the requirements of AB 1493, ARB approved amendments to the California Code of Regulations (CCR) adding GHG emission standards to California's existing motor vehicle emission standards in 2004. Amendments to CCR Title 13 Sections 1900 (CCR 13 1900) and 1961 (CCR 13 1961) and adoption of Section 1961.1 (CCR 13 1961.1) require automobile manufacturers to meet fleet average GHG emission limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes beginning with the 2009 model year. Emission limits are further reduced each model year through 2016.

In December 2004 a group of car dealerships, automobile manufacturers, and trade groups representing automobile manufacturers filed suit against ARB to prevent enforcement of CCR 13 1900 and CCR 13 1961 as amended by AB 1493 and CCR 13 1961.1 (Central Valley Chrysler-Jeep et al. v. Catherine E. Witherspoon, in her official capacity as Executive Director of the California Air Resources Board, et al.). The suit, heard in the U.S. District Court for the Eastern District of California, contended that California's implementation of regulations that in effect regulate vehicle fuel economy violates various federal laws, regulations, and policies. In January 2007, the judge hearing the case accepted a request from the State Attorney General's office that the trial be postponed until a decision is reached by the U.S. Supreme Court on a separate case addressing GHGs. In the Supreme Court Case, Massachusetts vs. EPA, the primary issue in question is whether the Federal Clean Air Act (CAA) provides authority for USEPA to regulate CO2 emissions. In April 2007, the U.S. Supreme Court ruled in Massachusetts' favor, holding that GHGs are air pollutants under the CAA. On December 11, 2007, the judge in the Central Valley Chrysler-Jeep case rejected each plaintiff's arguments and ruled in California's favor. On December 19, 2007, the USEPA denied California's waiver request. California filed a petition with the Ninth Circuit Court of Appeals challenging USEPA's denial on January 2, 2008.

The Obama administration subsequently directed the USEPA to re-examine their decision. On May 19, 2009, challenging parties, automakers, the State of California, and the federal government reached an agreement on a series of actions that would resolve these current and potential future disputes over the standards through model year 2016. In summary, the USEPA and the U.S. Department of Transportation agreed to adopt a federal program to reduce GHGs and improve fuel economy, respectively, from passenger vehicles in order to achieve equivalent or greater greenhouse gas benefits as the AB 1493 regulations for the 2012–2016 model years. Manufacturers agreed to ultimately drop current and forego similar future legal challenges, including challenging a waiver grant, which occurred on June 30, 2009. The State of California committed to (1) revise its standards to allow manufacturers to demonstrate compliance with the fleet-average GHG emission standard by "pooling" California and specified State vehicle sales; (2) revise its standards for 2012–2016 model year vehicles so that compliance with USEPA-adopted GHG standards would also comply with California's standards; and (3) revise its standards, as necessary, to allow manufacturers to use emissions data from the federal CAFE

program to demonstrate compliance with the AB 1493 regulations(36). Both of these programs are aimed at light-duty auto and light-duty trucks.

Executive Order S-3-05:

Executive Order S-3-05, which was signed by Governor Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change (37). It declares that increased temperatures could reduce the Sierra's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established total greenhouse gas emission targets. Specifically, emissions are to be reduced to the 1990 level by 2020, and to 80% below the 1990 level by 2050. The Executive Order directed the Secretary of the California Environmental Protection Agency to coordinate a multi-agency effort to reduce greenhouse gas emissions to the target levels. The Secretary also is required to submit biannual reports to the Governor and state Legislature describing: (1) progress made toward reaching the emission targets; (2) impacts of global warming on California's resources; and (3) mitigation and adaptation plans to combat these impacts. To comply with the Executive Order, the Secretary of the CalEPA created a Climate Action Team (CAT) made up of members from various state agencies and commission. CAT released its first report in March 2006. The report proposed to achieve the targets by building on voluntary actions of California businesses, local government and community actions, as well as through state incentive and regulatory programs.

California Assembly Bill 32 (AB 32):

In September 2006, Governor Arnold Schwarzenegger signed AB 32, the California Climate Solutions Act of 2006. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by the year 2020 (2). This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires that CARB adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state achieves reductions in GHG emissions necessary to meet the cap. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

In November 2007, CARB completed its estimates of 1990 GHG levels. Net emission 1990 levels were estimated at 427 MMTs (emission sources by sector were: transportation – 35 percent; electricity generation – 26 percent; industrial – 24 percent; residential – 7 percent; agriculture – 5 percent; and commercial – 3 percent) [5]. Accordingly, 427 MMTs of CO2 equivalent was

[5] On a national level, the EPA's Endangerment Finding stated that electricity generation is the largest emitting sector (34%),

established as the emissions limit for 2020. For comparison, CARB's estimate for baseline GHG emissions was 473 MMT for 2000 and 532 MMT for 2010. "Business as usual" conditions (without the 28.4 percent reduction to be implemented by CARB regulations) for 2020 were projected to be 596 MMTs.

In December 2007, CARB approved a regulation for mandatory reporting and verification of GHG emissions for major sources. This regulation covered major stationary sources such as cement plants, oil refineries, electric generating facilities/providers, and co-generation facilities, which comprise 94 percent of the point source CO2 emissions in the State.

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. Implementation of individual measures must begin no later than January 1, 2012, so that the emissions reduction target can be fully achieved by 2020.

Table 2-3 summarizes estimated GHG emissions reduction realized from implementation of regulations and programs outlined in the CARB Scoping Plan. While local government operations were not accounted for in achieving the 2020 emissions reduction, local land use changes are estimated to result in a reduction of 5 MMTons of CO2e, which is approximately 3 percent of the 2020 GHG emissions reduction goal. In recognition of the critical role local governments would play in successful implementation of AB 32, CARB is recommending GHG reduction goals of 15 percent of 2006 levels by 2020 to ensure that municipal and community-wide emissions match the state's reduction target. According to the Measure Documentation Supplement to the Scoping Plan, local government actions and targets are anticipated to reduce vehicle miles by approximately 2 percent through land use planning, resulting in a potential GHG reduction of 2 MMTons tons of CO2e (or approximately 1.2 percent of the GHG reduction target).

California Senate Bill No. 1368 (SB 1368):

In 2006, the State Legislature adopted Senate Bill 1368 ("SB 1368"), which was subsequently signed into law by the Governor (9). SB 1368 directs the California Public Utilities Commission ("CPUC") to adopt a greenhouse gas emission performance standard ("EPS") for the future power purchases of California utilities. SB 1368 seeks to limit carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than five years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. Due to the carbon content of its fuel source, a coal-fired plant cannot meet this standard because such plants emit roughly twice as much carbon as natural gas, combined cycle plants.

Accordingly, the new law would effectively prevent California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of

followed by the transportation (28%), and industry (19%)

the State. Thus, SB 1368 would lead to dramatically lower greenhouse gas emissions associated with California energy demand, as SB 1368 would effectively prohibit California utilities from purchasing power from out of state producers that cannot satisfy the EPS standard required by SB 1368.

CEQA Guidelines

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 greenhouse gas emissions resulting from a project, and which model or methodology to use . . .; or 2. Rely on a qualitative analysis or performance based standards."

Also amended were CEQA Guidelines Sections 15126.4 and 15130, which address mitigation measures and cumulative impacts respectively. Greenhouse gas mitigation measures are referenced in general terms, but no specific measures are championed. The revision to the cumulative impact discussion requirement (Section 15130) simply directs agencies to analyze greenhouse gas emissions in an EIR when a Project's incremental contribution of emissions may be cumulatively considerable, however it does not answer the question of when emission are cumulatively considerable.

Section 15183.5 permits programmatic greenhouse gas analysis and later project-specific tiering, as well as the preparation of Greenhouse Gas Reduction Plans. Compliance with such plans can support determination that a Project's cumulative effect is not cumulatively considerable, according to proposed Section 15183.5(b).

CEQA emphasizes that the effects of greenhouse gas emissions are cumulative, and should be analyzed in the context of CEQA's requirements for cumulative impacts analysis. (See CEQA Guidelines Section 15130(f)).

Section 15064.4(b) of the CEQA Guidelines provides direction for lead agencies for assessing the significance of impacts of greenhouse gas emissions:

1. The extent to which the project may increase or reduce greenhouse gas 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; or
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 greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

TABLE 2-3: CARB SCOPING PLAN GHG MEASURES AND ESTIMATED GHG EMISSIONS REDUCTIONS

Recommended Scoping Plan Measures	*Reductions Counted toward 2020 Target of 169 MMT CO2e*	*Percentage of Statewide 2020 Target*
Cap and Trade Program and Associated Measures		
California Light-Duty Vehicle GHG Standards	31.7	19%
Energy Efficiency	26.3	16%
Renewable Portfolio Standard (33 percent by 2020)	21.3	13%
Low Carbon Fuel Standard	15	9%
Regional Transportation-Related GHG Targets[1]	5	3%
Vehicle Efficiency Measures	4.5	3%
Goods Movement	3.7	2%
Million Solar Roofs	2.1	1%
Medium/Heavy Duty Vehicles	1.4	1%
High Speed Rail	1.0	1%
Industrial Measures	0.3	0%
Additional Reduction Necessary to Achieve Cap	34.4	20%
Total Cap and Trade Program Reductions	146.7	87%
Uncapped Sources/Sectors Measures		
High Global Warming Potential Gas Measures	20.2	12%
Sustainable Forests	5	3%
Industrial Measures (for sources not covered under cap and trade program)	1.1	1%
Recycling and Waste (landfill methane capture)	1	1%
Total Uncapped Sources/Sectors Reductions	27.3	16%
Total Reductions Counted toward 2020 Target	174	100%
Other Recommended Measures – Not Counted toward 2020 Target		
State Government Operations	1.0 to 2.0	1%
Local Government Operations	To Be Determined[2]	NA
Green Buildings	26	15%
Recycling and Waste	9	5%
Water Sector Measures	4.8	3%
Methane Capture at Large Dairies	1	1%
Total Other Recommended Measures – Not Counted toward 2020 Target	42.8	NA

Source: CARB. 2008, MMTons CO2e: million metric tons of CO2e

[1]Reductions represent an estimate of what may be achieved from local land use changes. It is not the SB 375 regional target.

[2]According to the Measure Documentation Supplement to the Scoping Plan, local government actions and targets are anticipated to reduce vehicle miles by approximately 2 percent through land use planning, resulting in a potential GHG reduction of 2 million metric tons of CO2e (or approximately 1.2 percent of the GHG reduction target). However, these reductions were not included in the Scoping Plan reductions to achieve the 2020 Target

The CEQA Guidelines do not identify a threshold of significance for greenhouse gas emissions, nor do they prescribe assessment methodologies or specific mitigation measures. Instead, they call for a "good-faith effort, based on available information, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project." The Guidelines 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 Guidelines also encourage public agencies to make use of programmatic mitigation plans and programs from which to tier when they perform individual project analyses. Specific GHG language incorporated in the Guidelines' suggested Environmental Checklist (Guidelines Appendix G) is as follows:

VII. GREENHOUSE GAS EMISSIONS

Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Executive Order S-01-07:

On January 18, 2007 California Governor Arnold Schwarzenegger, through Executive Order S-01-07, mandated a statewide goal to reduce the carbon intensity of California's transportation fuel by at least ten percent by 2020 (38). The order also requires that a California specific Low Carbon Fuel Standard be established for transportation fuels.

Senate Bills 1078 and 107 and Executive Order S-14-08:

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20% of their supply from renewable sources by 2017 (39). SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010 (38). In November 2008 Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewable Energy Standard to 33% renewable power by 2020 (40).

Senate Bill 375:

SB 375, signed in September 2008 (Chapter 728, Statutes of 2008), aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires metropolitan planning organizations (MPOs) to adopt a sustainable communities strategy (SCS) or alternative planning strategy (APS) that would prescribe land use allocation in that MPO's regional transportation plan. ARB, in consultation with MPOs, would provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035.

These reduction targets would be updated every 8 years but can be updated every 4 years if advancements in emissions technologies affect the reduction strategies to achieve the targets.

ARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects would not be eligible for funding programmed after January 1, 2012.

This law also extends the minimum time period for the regional housing needs allocation cycle from 5 years to 8 years for local governments located within an MPO that meets certain requirements. City or county land use policies (including general plans) are not required to be consistent with the regional transportation plan (and associated SCS or APS). However, new provisions of CEQA would incentivize (through streamlining and other provisions) qualified projects that are consistent with an approved SCS or APS, categorized as "transit priority projects."

The Southern California Association of Governments (SCAG) is required by law to update the Southern California Regional Transportation Plan (RTP) every four years. The 2012 draft plan has been released; this draft plan differs from past plans because it includes development of a SCS. The RTP/SCS incorporates land use and housing policies to meet the greenhouse gas emissions targets established by the California Air Resource Board for 2020 (8% reduction) and 2035 (13% reduction). On April 4, 2012, the Regional Council of SCAG adopted the 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): Towards a Sustainable Future.

CARB's Preliminary Draft Staff Proposal for Interim Significance Thresholds:

Separate from its Scoping Plan approved in December of 2008 (41), CARB issued a Staff Proposal in October 2008, as its first step toward developing recommended statewide interim thresholds of significance for GHGs that may be adopted by local agencies for their own use. CARB staff's objective in this proposal is to develop a threshold of significance that would result in the vast majority (approximately 90 percent statewide) of GHG emissions from new industrial projects being subject to CEQA's requirement to impose feasible mitigation. The proposal does not attempt to address every type of project that may be subject to CEQA, but instead focuses on common project types that, collectively, are responsible for substantial GHG emissions – specifically, industrial, residential, and commercial projects. CARB is developing these thresholds in these sectors to advance climate objectives, streamline project review, and encourage consistency and uniformity in the CEQA analysis of GHG emissions throughout the state. These draft thresholds are under revision in response to comments. There is currently no timetable for finalized thresholds at this time.

As currently proposed by CARB, a quantitative threshold of 7,000 metric tons (MT) of CO2e per year for operational emissions (excluding transportation), and performance standards yet to be defined for construction and transportation emissions are under consideration. However, CARB's proposal is not yet final, and thus cannot be applied to the Project.

South Coast Air Quality Management District Recommendations for Significance Thresholds:

In April 2008, the South Coast Air Quality Management District (SCAQMD), in order to provide guidance to local lead agencies on determining the significance of GHG emissions identified in CEQA documents, convened a "GHG CEQA Significance Threshold Working Group." The goal of

the working group is to develop and reach consensus on an acceptable CEQA significance threshold for GHG emissions that would be utilized on an interim basis until CARB (or some other state agency) develops statewide guidance on assessing the significance of GHG emissions under CEQA.

Initially, SCAQMD staff presented the working group with a significance threshold that could be applied to various types of projects—residential; non-residential; industrial; etc (42). However, the threshold is still under development. In December 2008, staff presented the SCAQMD Governing Board with a significance threshold for stationary source projects where it is the lead agency. This threshold uses a tiered approach to determine a project's significance, with 10,000 metric tons of carbon dioxide equivalent (MTCO2e) as a screening numerical threshold for stationary sources. More importantly it should be noted that when setting the 10,000 MTCO2e threshold, the SCAQMD did not consider mobile sources (vehicular travel), rather the threshold is based mainly on stationary source generators such as boilers, refineries, power plants, etc. Therefore it would be misleading to apply a threshold that was developed without consideration for mobile sources to a Project where the majority of emissions are related to mobile sources. Thus there is no SCAQMD threshold that can be applied to this Project.

In September 2010(43), the Working Group released additional revisions that consist of the following recommended tiered approach:

- Tier 1 consists of evaluating whether or not the Project qualifies for applicable CEQA exemptions.
- Tier 2 consists of determining whether or not a Project is consistent with a greenhouse gas reduction plan. If a Project is consistent with a greenhouse gas reduction plan, it would not have a significant impact.
- Tier 3 consists of screening values at the discretion of the lead agency; however they should be consistent for all projects within its jurisdiction. Project-related construction emissions should be amortized over 30 years and should be added back the Project's operational emissions. The following thresholds are proposed for consideration:
    - 3,000 MTCO2e per year for all land use types

      or
    - 3,500 MTCO2e per year for residential; 1,400 MTCO2e per year for commercial; or 3,000 MTCO2e per year for mixed-use projects
- Tier 4 has the following options:
    - Option 1: Reduce emissions from business as usual by a certain percentage (currently undefined)
    - Option 2: Early implementation of applicable AB 32 Scoping Plan measures
    - Option 3: A project-level efficiency target of 4.8 MTCO2e per service population as a 2020 target and 3.0 MTCO2e per service population as a 2035 target. The recommended plan-level target for 2020 is 6.6 MTCO2e and the plan level target for 2035 is 4.1 MTCO2e
- Tier 5 involves mitigation offsets to achieve target significance thresholds

The SCAQMD has also adopted Rules 2700, 2701, and 2702 that address GHG reductions. However, these rules address boilers and process heater, forestry, and manure management projects, none of which are required by the Project

2.8 DISCUSSION ON ESTABLISHMENT OF SIGNIFICANCE THRESHOLDS

In order to assess the significance of a Project's environmental impacts it is necessary to identify quantitative or qualitative thresholds which, if exceeded, would constitute a finding of significance. As discussed above, while Project-related GHG emissions can be estimated, the direct impacts of such emissions on climate change and global warming cannot be determined on the basis of available science. There is no evidence at this time that would indicate that the emissions from a project the size of the Project considered herein would directly or indirectly affect global climate change.

AB 32 states, in part, that "[g]lobal warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California." Because global warming is the result of GHG emissions, and GHGs are emitted by innumerable sources worldwide, global climate change is considered to be a cumulative impact.

As previously discussed, the CEQA Guidelines indicate that a project would result in a significant impact on climate change if a project were to: a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; Or b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Based on the above factors (and particularly the adopted addition of CEQA Guideline § 15064.4, subdivisions (b)(2) and (b)(3), the City of Wildomar (the Project lead agency) has determined it is appropriate to rely on AB 32 implementation guidance as one benchmark for purposes of this analysis (44). In adopting AB 32, the legislature determined the necessary GHG reductions for the state to make in order to sufficiently offset its contribution to the cumulative climate change problem. Accordingly, the project's GHG emission levels will be analyzed to determine whether project approval would impede compliance with the GHG emissions reduction mandate established by AB 32 which requires that California's GHG emissions limit be reduced to 1990 levels by 2020. As noted in the scoping Plan (45), a reduction of 28.5 percent below the "business as usual" scenario is required to meet the goals of AB 32 (46).

Specifically, to understand what percentage reduction in emissions would be required to achieve AB 32's goals, CARB first determined that the 1990 baseline GHG emission level is 427 (MMT) CO2E. CARB then estimated the statewide emissions that would be generated in the 2020 assuming (see Appendix F of CARB 2008). CARB's prediction for 2020 emissions is 596 MMT CO2E, assuming "business as usual." The 2020 business-as-usual forecast does not take any credit for reductions from GHG measures included in the Scoping Plan, including those enacted before AB 32. Accordingly, AB 32's mandated decrease in GHG emissions from 596 to 427 MMT CO2E is equivalent to a 28.5% emissions reduction. Thus, this AB 32 mandate would require a 28.5% reduction in emissions relative to the 2020 business-as-usual scenario by 2020.

Pursuant to Guidelines Section 15064(h)(3) for a project consistent with AB 32's goal, which would require a 28.5 percent or greater reduction from BAU, project specific and cumulative climate change impacts would be less than significant. This approach is consistent with guidance released by SCAQMD, Riverside County, San Joaquin Air Pollution Control District (SJVAPCD) and Bay Area Air Quality Management District (BAAQMD). The AB 32 consistency threshold was also upheld in Citizens for Responsible Equitable Environmental Development v. City of Chula Vista (2011) 197 Cal.App.4th 327. Section 15064.7 of the CEQA Amendments states that "[w]hen adopting thresholds of significance, a lead agency may consider thresholds of significant previously adopted or recommended by other public agencies or recommended by experts."

3 PROJECT GREENHOUSE GAS IMPACT

3.1 CALIFORNIA EMISSIONS ESTIMATOR MODEL™ (CALEEMOD™) EMPLOYED TO ESTIMATE GHG EMISSIONS

On October 2, 2013, the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) released the latest version of the California Emissions Estimator Model™ (CalEEMod™) v2013.2.2. The purpose of this model is to more accurately calculate construction-source and operational-source criteria pollutant (NO_x, VOC, PM_{10}, $PM_{2.5}$, SO_x, and CO) and greenhouse gas (GHG) emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (47). Accordingly, the latest version of CalEEMod has been used for this Project to determine construction and operational air quality impacts. Output from the model runs for both construction and operational activity are provided in Appendix 3.1

3.2 CONSTRUCTION AND OPERATIONAL LIFE-CYCLE ANALYSIS NOT REQUIRED

A full life-cycle analysis (LCA) for construction and operational activity is not included in this analysis due to the lack of consensus guidance on LCA methodology at this time (48). Life-cycle analysis (i.e., assessing economy-wide GHG emissions from the processes in manufacturing and transporting all raw materials used in the project development, infrastructure and on-going operations) depends on emission factors or econometric factors that are not well established for all processes. At this time a LCA would be extremely speculative and thus has not been prepared.

Additionally, the SCAQMD recommends analyzing direct and indirect project GHG emissions generated within California and not life-cycle emissions because the life-cycle effects from a project could occur outside of California, might not be very well understood or documented, and would be challenging to mitigate (49). Additionally, the science to calculate life cycle emissions is not yet established or well defined, therefore SCAQMD has not recommended, and is not requiring, life-cycle emissions analysis.

3.3 EXISTING PROJECT SITE GREENHOUSE GAS EMISSIONS

The Project site is generally level and currently vacant. The site is essentially an open field containing non-native grasses, shrubs, and some ornamental vegetation associated with two previously-demolished residences. Thus the site is currently not generating a quantifiable amount of GHG emissions.

3.4 PROJECT RELATED GREENHOUSE GAS EMISSIONS

3.4.1 CONSTRUCTION EMISSIONS

Construction activities associated with the Project would result in emissions of CO2 and CH4 from construction activities. The report Wildomar Walmart Air Quality Impact Analysis Report, Urban Crossroads, Inc. (2013) contains detailed information regarding construction activity (50).

For construction phase Project emissions, GHGs are quantified and amortized over the life of the Project. To amortize the emissions over the life of the Project, the SCAQMD recommends calculating the total greenhouse gas emissions for the construction activities, dividing it by the a 30 year project life then adding that number to the annual operational phase GHG emissions (51). As such, construction emissions were amortized over a 30 year period and added to the annual operational phase GHG emissions.

3.4 OPERATIONAL EMISSIONS

Operational activities associated with the proposed Project will result in emissions of CO2, CH4, and N2O from the following primary sources:

- Building Energy Use (combustion emissions associated with natural gas and electricity)
- Water Supply, Treatment and Distribution
- Solid Waste
- Mobile Source Emissions

3.4.1 BUILDING ENERGY USE

GHGs are emitted from buildings as a result of activities for which electricity and natural gas are typically used as energy sources. Combustion of any type of fuel emits CO2 and other GHGs directly into the atmosphere; these emissions are considered direct emissions associated with a building. GHGs are also emitted during the generation of electricity from fossil fuels; these emissions are considered to be indirect emissions. Unless otherwise noted, CalEEMod default parameters were used.

3.4.2 WATER SUPPLY, TREATMENT AND DISTRIBUTION

Indirect GHG emissions result from the production of electricity used to convey, treat and distribute water and wastewater. The amount of electricity required to convey, treat and distribute water depends on the volume of water as well as the sources of the water. Unless otherwise noted, CalEEMod default parameters were used.

3.4.3 SOLID WASTE

Commercial land uses would result in the generation and disposal of solid waste. A large percentage of this waste would be diverted from landfills by a variety of means, such as reducing the amount of waste generated, recycling, and/or composting. The remainder of the waste not diverted would be disposed of at a landfill. GHG emissions from landfills are associated with the anaerobic breakdown of material. GHG emissions associated with the disposal of solid waste associated with the Project were calculated using CalEEMod default parameters.

3.4.4 MOBILE SOURCE EMISSIONS

GHG emissions will also result from mobile sources associated with the Project. These mobile source emissions will result from the typical daily operation of motor vehicles by visitors, employees, and customers.

Project mobile source emissions are dependent on both overall daily vehicle trip generation. Trip characteristics available from the report, Wildomar Walmart Traffic Impact Analysis (Urban Crossroads, Inc., 2013) were utilized in this analysis (38).

The Project will reduce vehicle miles traveled by: designing a Project that promotes a suburban center setting; increasing the diversity in land uses; providing design elements that enhance walkability and connectivity; as well as incorporation of bicycle lanes and paths; improving the on-site pedestrian network, with connection to off-site pedestrian paths. Thus the appropriate CalEEMod parameters have been enabled to ensure appropriate credit is taken for these design features.

3.5 EMISSIONS SUMMARY

3.5.1 BAU SCENARIO

The BAU scenario presented here is consistent with the California Air Resources Board's definition of BAU[6]. More specifically, the BAU scenario evaluated herein reflects development of the Project site pursuant to the Wildomar Walmart absent design features, operational programs, mitigation measures, and state requirements established by AB 32 which would collectively act to reduce GHG emissions.

The total amount of Project-related GHG emissions under a BAU scenario, without accounting for any design features or regulatory developments that would reduce GHG emissions from direct and indirect sources combined would total approximately 13,297.33 MTCO2e, as shown on Table 3-2.

6 CARB defines BAU in its Scoping Plan as emissions levels that would occur if California continued to grow and add new GHG emissions but did not adopt any measures to reduce emissions. Projections for each emission-generating sector were compiled and used to estimate emissions for 2020 based on 2002-2004 emissions intensities. Under CARB's definition of BAU, new growth is assumed to have the same carbon intensities as was typical from 2002 through 2004

TABLE 3-1: "BUSINESS AS USUAL" GREENHOUSE GAS EMISSIONS

Emission Source	Emissions (metric tons per year)			
	CO_2	CH_4	N_2O	Total CO_2E
Annual construction-related emissions amortized over 30 years	30.33	0.004	--	30.41
Area	0.03	1.30e-4	--	0.03
Energy	1,209.80	0.05	0.01	1,214.72
Mobile Sources	11,505.35	1.06	--	11,527.67
Waste	184.55	10.91	--	413.59
Water Usage	95.53	0.53	0.01	110.91
Total CO_2E (All Sources)	**13,297.33**			

Source: CalEEMod™ model output, See Appendix 3.1 for detailed model outputs.
Note: Totals obtained from CalEEMod™ and may not total 100% due to rounding.

Table results include scientific notation. *e* is used to represent *times ten raised to the power of* (which would be written as x 10^{b}") and is followed by the value of the exponent

3.5.3 PROJECT SCENARIO

The total amount of Project-related GHG emissions when accounting for applicable regulatory developments, project design features, and mitigation measures that would reduce GHG emissions from direct and indirect sources combined would total 8,625.51 MMTCO2e as shown on Table 3-3. This translates to in an approximate 35.13% reduction in GHG emissions when compared to a BAU scenario., Thus, with implementation of the Project's design features, application of proposed air pollutant mitigation measures, and realization of regulatory developments, the Project's GHG reduction (35.13 %) would exceed the AB 32 reduction target of 28.5% (2).

TABLE 3-2: 2020 GREENHOUSE GAS EMISSIONS WITH APPLICABLE REGULATORY DEVELOPMENTS, DESIGN FEATURES AND MITIGATION MEASURES

Emission Source	Emissions (metric tons per year)			
	CO_2	CH_4	N_2O	Total CO_2E
Annual construction-related emissions amortized over 30 years	30.33	0.004	--	30.41
Area	0.03	8.00e-5	--	0.03
Energy	729.84	0.04	9.76e-3	733.76
Mobile Sources	7,376.38	0.23	--	7,381.25
Waste	184.55	10.91	--	413.59
Water Usage	54.19	0.43	0.01	66.48
Total CO_2E (All Sources)	**8,625.51**			

Source: CalEEMod™ model output, See Appendix 3.1 for detailed model outputs.
Note: Totals obtained from CalEEMod™ and may not total 100% due to rounding.

Table results include scientific notation. *e* is used to represent *times ten raised to the power of* (which would be written as x 10^{b}") and is followed by the value of the exponent

3.6 SUMMARY AND CONCLUSIONS

PROJECT IS CONSISTENT WITH AND SUPPORTS AB32 AND CARB SCOPING PLAN

The analysis demonstrates that the Project is consistent with, or otherwise not in conflict with, recommended measures and actions in the CARB Scoping Plan. The Scoping Plan establishes strategies and measures that would achieve GHG reductions goals set forth in the Global Warming Solutions Act of 2006 (AB 32). More specifically, the CARB Scoping Plan calls for an approximately 28.5 percent reduction in GHG emissions when compared to BAU conditions.

As shown on Table 3-3, the total amount of Project-related GHG emissions for BAU without accounting for any project design features or regulatory developments that would reduce GHG emissions from direct and indirect sources combined would total 13,297.33 MTCO2e. The total amount of Project-related GHG emissions when accounting for applicable regulatory developments, project design features, and mitigation measures that would reduce GHG emissions from direct and indirect sources combined would total 8,625.51 MTCO2e. This results in a 35.16% reduction from BAU, thus with implementation of the Project's design features and regulatory developments, the Project's GHG reduction would exceed the AB 32 reduction target of 28.5%.

TABLE 3-3: SUMMARY OF GHG EMISSIONS FOR BAU VS PROJECT

Category	CO2e Emissions	
	BAU	Project
	Metric Tons per Year	
Construction	30.41	30.41
Area	0.03	0.03
Energy Use	1,214.72	733.76
Mobile Sources (Traffic)	11,527.67	7,381.25
Waste Disposed	413.59	413.59
Water Use	110.91	66.48
Total	**13,297.33**	**8,625.51**
Project Improvement over BAU	**35.13%**	

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5 CERTIFICATION

The contents of this greenhouse gas study report represent an accurate depiction of the greenhouse gas impacts associated with the proposed Wildomar Walmart Project. The information contained in this greenhouse gas report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 660-1994 ext. 217.

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APPENDIX 3.1:

CALEEMOD EMISSIONS MODEL OUTPUTS