Appendix 4.2

Air Quality

The Homestead

Air Quality Impact Analysis

City of Eastvale

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LIST OF ABBREVIATED TERMS

(1)	Reference
$\mu g/m^3$	Microgram per Cubic Meter
AADT	Annual Average Daily Trips
AQ	Air Quality
AQIA	Air Quality Impact Analysis
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
BBAQMD	Bay Area Air Quality Management District
BC	Black Carbon
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CALGreen	California Green Building Standards Code
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CITY	City of Eastvale
CO	Carbon Monoxide
CY	Cubic Yards
DPM	Diesel Particulate Matter
DRRP	Diesel Risk Reduction Plan
EIR	Environmental Impact Reports
EMFAC	Emission Factor Model
EPA	Environmental Protection Agency
ETW	Equivalent Test Weight
GHG	Greenhouse Gas
GVWR	Goss Vehicle Weight Rating
HDT	Heavy Duty Trucks
HHD	Heavy-Heavy Duty
I-15	Interstate-15
LBS/DAY	Pounds Per Day
LDA	Light Duty Automobiles

LHD	Light Heavy Duty
LST	Localized Significance Threshold
MATES	Multiple Air Toxics Exposure Study
LST METHODOLOGY	Final Localized Significance Threshold Methodology
MHD	Medium Heavy Duty
MM	Mitigation Measures
NAAQS	National Ambient Air Quality Standards
NCHRP	National Cooperative Highway Research Program
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides
NOP	Notice of Preparation
O_3	Ozone
OBD-II	On-Board Diagnostic
Pb	Lead
PM_{10}	Particulate Matter 10 microns in diameter or less
$PM_{2.5}$	Particulate Matter 2.5 microns in diameter or less
POLA	Port of Los Angeles
POLB	Port of Long Beach
PPM	Parts Per Million
Project	The Homestead
RECLAIM	Regional Clean Air Incentives Market
RFG-2	Reformulated Gasoline Regulation
RivTAM	Riverside County Transportation Analysis Model
ROG	Reactive Organic Gases
RTP/SCS	Regional Transportation Plan/ Sustainable Communities Strategy
SB	Senate Bill
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SF	Square Feet
SIPs	State Implementation Plans
SO_2	Sulfur Dioxide
SP	Specific Plan
SRA	Source Receptor Area
TAC	Toxic Air Contaminant
TIA	Traffic Impact Analysis
TOG	Total Organic Gases

TSF	Thousand Square Feet
UFP	Ultra Fine Particles
URBEMIS	Urban Emissions
UTRs	Utility Tractors
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds
VPH	Vehicles Per Hour

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EXECUTIVE SUMMARY

ES.1 SUMMARY OF FINDINGS

The results of this *The Homestead Air Quality Impact Analysis* are summarized below based on the significance criteria in Section 3 of this report consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines (1). Table ES-1 shows the findings of significance for each potential air quality impact under CEQA before and after any required mitigation measures described below.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Regional Construction Emissions	3.4	*Less Than Significant*	*n/a*
Localized Construction Emissions	3.6	*Less Than Significant*	*n/a*
Regional Operational Emissions	3.5	*Potentially Significant*	*Significant and Unavoidable*
Localized Operational Emissions	3.7	*Less Than Significant*	*n/a*
CO "Hot Spot" Analysis	3.8	*Less Than Significant*	*n/a*
Air Quality Management Plan	3.9	*Potentially Significant*	*Significant and Unavoidable*
Sensitive Receptors	3.10	*Less Than Significant*	*n/a*
Odors	3.11	*Less Than Significant*	*n/a*
Cumulative Impacts	3.12	*Potentially Significant*	*Significant and Unavoidable*

ES.2 STANDARD REGULATORY REQUIREMENTS/BEST AVAILABLE CONTROL 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. South Coast Air Quality Management District (SCAQMD) Rules that are currently applicable during construction activity for this Project include but are not limited to Rule 403 (Fugitive Dust) (2) and Rule 1113 (Architectural Coatings) (3). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken

BACM AQ-1

The contractor shall adhere to applicable measures contained in Table 1 of Rule 403 including, but not limited to (2):

- 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 limited to 15 miles per hour or less.

BACM AQ-2

The following measures shall be incorporated into Project plans and specifications as implementation of SCAQMD Rule 1113 (3):

- Only “Low-Volatile Organic Compounds (VOC)” paints (no more than 50 gram/liter of VOC) consistent with SCAQMD Rule 1113 shall be used.

ES.3 PROJECT DESIGN FEATURES

The Project incorporates and expresses the following design features and attributes promoting energy efficiency and sustainability. Because these features/attributes are integral to the Project, and/or are regulatory requirements, they are not considered to be mitigation measures.

- The Project buildings would be designed to support the installation of photo-voltaic solar panels (PV system) on the rooftops of the warehouse buildings if they are desired in the future. The installation of a PV system will be determined by each individual building tenant/operator.
- All on-site *outdoor* cargo handling equipment (CHE) (including yard trucks, hostlers, yard goats, pallet jacks, forklifts, and other on-site equipment) will be powered by compressed natural gas.
- All on-site *indoor* forklifts will be powered by electricity.
- To reduce water demands and associated energy use, subsequent development proposals within the Project site would be required to implement a Water Conservation Strategy and demonstrate a minimum 20% reduction in indoor water usage when compared to baseline water demand (total expected water demand without implementation of the Water Conservation Strategy)[1]. The Project would also be required to implement the following:

1 Reduction of 20% indoor water usage is consistent with the current CALGreen Code performance standards 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 consistent with provisions of the City of Eastvale requirements;
    - Use of water-efficient irrigation techniques consistent with provisions of the City of Eastvale requirements;
    - U.S. Environmental Protection Agency (EPA) Certified WaterSense labeled or equivalent faucets, high-efficiency toilets (HETs), and water-conserving shower heads.
- The Project would meet incumbent (at the time of building permits) 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).

ES.4 CONSTRUCTION-SOURCE MITIGATION MEASURES

The Project would not result in an exceedance of any regional or localized construction-source emissions thresholds. As such, the Project would not result in any significant impacts and no mitigation measures are required.

ES.5 OPERATIONAL-SOURCE MITIGATION MEASURES

The Project would exceed regional thresholds of significance established by the SCAQMD for emissions of nitrogen oxides (NO_X). It is important to note that 47 percent of the Project's NO_X emissions are derived from heavy duty truck trips. The following mitigation measures (MM AQ-1 through MM AQ-5) are designed to reduce the operational NO_X emissions but will not be sufficient enough to reduce the NO_X emissions to less than the significant impacts.

MM AQ-1

The truck access gates and loading docks within the truck court on the Project site shall be posted with signs which state:

- Truck drivers shall turn off engines when not in use;
- Diesel delivery trucks servicing the Project shall not idle for more than five (5) minutes; and
- Telephone numbers of the building facilities manager and the CARB to report violations.

MM AQ-2

The City will require operators of the proposed facilities to encourage the trucks to incorporate energy efficiency improvement features through the Carl Moyer Program—including truck modernization, retrofits, and/or aerodynamic kits and low rolling resistance tires—to reduce fuel consumption.

MM AQ-3

Incorporate Electric Vehicle Charging Stations and Carpool Parking. The project will be designed to incorporate electric vehicle charging stations and a minimum of five carpool parking spaces at each building for employees and the public to use.

MM AQ-4

Provide Electric Interior Vehicles. All buildings will be designed to provide infrastructure to support use of electric-powered forklifts and/or other interior vehicles.

MM AQ-5

The project shall be designed to incorporate electric vehicle charging stations and carpool parking spaces for employees.

ES.6 Evaluation of Applicability of SCAQMD-Recommended Mitigation Measures

The SCAQMD typically provides a comment letter on the Notice of Preparation (NOP) of a CEQA document for the Project. The SCAQMD's comment letter typically includes a reference to several sources to consider for purposes of mitigating significant air quality impacts. The following table evaluates the applicability of the SCAQMD's recommended measures.

TABLE ES-1: APPLICABILITY OF SCAQMD-RECOMMENDED MITIGATION MEASURES

Mitigation Measure	Applicability
Chapter 11 of the SCAQMD *CEQA Air Quality Handbook* (Construction)	The applicable mitigation measures listed in Chapter 11 (Tables 11-2, 11-3, and 11-4) of the SCAQMD *CEQA Air Quality Handbook* have been reviewed. However, no additional mitigation measures are necessary since Project-related construction emissions (regional and localized) would not exceed the applicable SCAQMD thresholds with application of BACMs.
Chapter 11 of the SCAQMD *CEQA Air Quality Handbook* (Operations)	The applicable mitigation measures listed in Chapter 11 (Tables 11-6c and 11-7c) of the SCAQMD *CEQA Air Quality Handbook* have been reviewed. Mitigation measures recommended for the Project are generally consistent with measures recommended by SCAQMD. However, none of the additional mitigation measures beyond those identified above would reduce the significant NO_X impact to less than significant levels. It should be noted the SCAQMD *CEQA Air Quality Handbook*. Additionally, several of the measures listed provide a negligible NO_X reduction with a number designated by SCAQMD has having no quantified benefit or negligible benefit. Therefore, implementation of these measures would not avoid or substantially lessen mobile source NO_X emissions attributable to the Project.

SCAQMD CEQA Web Pages (Fugitive Dust)	With application of BACMs, the Project would not have a significant impact for construction related particulate matter less than 10 Microns (PM_{10}) or particulate matter less than 2.5 Microns ($PM_{2.5}$) emissions. Therefore, no additional mitigation measures are required to reduce fugitive dust emissions.
SCAQMD CEQA Web Pages (Harbor Craft, Locomotives, Ocean Going Vessels)	The following mitigation measures are not applicable to the proposed Project. It is not expected that the Project would include the use of a harbor craft, locomotives, or ocean-going vessels.
SCAQMD CEQA Web Pages (Off-Road Engines)	Mitigation measures that would apply to off-road engines have been reviewed. Notwithstanding, implementation of these measures would not avoid or substantially lessen mobile source NO_X emissions attributable to the project.
SCAQMD CEQA Web Pages (On-Road Engines)	The California Air Resources Board (CARB) has worked closely with the U.S. Environmental Protection Agency (EPA), engine and vehicle manufacturers, and other interested parties to reduce emissions from heavy-duty diesel vehicles in California, through a combination of measures including regulations requiring the use of ultra-low sulfur diesel fuel, new emission standards, restrictions on idling, addition of post-combustion filter and catalyst equipment, and retrofits for diesel truck fleets. These programs are expected to result in significant reductions in NO_X, VOC, PM_{10}, $PM_{2.5}$, and carbon monoxide (CO) emissions as they are fully implemented. Under the Truck and Bus Regulation, adopted by CARB in 2008, all diesel truck fleets operating in California are required to adhere to an aggressive schedule for upgrading and replacing heavy-duty truck engines. Pursuant to such regulation, older, heavier trucks, i.e., those with pre-2000-year engines and a gross vehicle weight rating (GVWR) greater than 26,000 pounds are already required to have installed a PM filter and must be replaced with a 2010 engine between 2015 and 2020, depending on the model year. By 2015, all heavier pre-1994 trucks must be upgraded to 2010 engines and newer trucks are thereafter required to be replaced over the next eight years. Older, more polluting trucks are required to be replaced first, while trucks that already have relatively clean 2007-2009 engines are not required to be replaced until 2023. Lighter trucks (those with a GVWR of 14,001 to 26,000 pounds) must adhere to a similar schedule and will all be replaced by 2020.

	Further, nearly all trucks that are not required under the Truck and Bus Regulation to be replaced by 2015 are required to be upgraded with a PM filter by that date. Therefore, most heavy-duty trucks entering the project site will meet or exceed EPA 2007 and 2010 emission standards within a relatively short period of time after the project becomes operational in 2020, and all such trucks entering the property will meet or exceed such standards by 2023. Federal and state agencies regulate and enforce vehicle emission standards. It is not feasible for the City of Eastvale staff to effectively enforce a prohibition on trucks from entering the property that are otherwise permitted to operate in California and access other properties in the city, region, and state. And, even if the City were to apply such a restriction, it would merely cause warehouse operators using truck fleets older than 2007/2010 to locate in another location in the South Coast Air Basin (SCAB) where the restriction does not apply, thereby resulting in no improvement to regional air quality. Further if a truck that did not meet this requirement were to attempt access to the site and be denied, there would be more idling emissions and travel emissions associated with that truck.
California Air Pollution Control Officers Association's (CAPCOA) *Quantifying Greenhouse Gas Mitigation Measures*	All feasible and applicable mitigation measures listed in the Energy, Water, and Transportation sections (as shown in Chart 6-1 and Chart 6-2 of the CAPCOA document) have been applied to the analysis. However, these measures are aimed at reducing GHG emissions and implementation of these measures would not avoid or substantially lessen mobile source NO_X emissions attributable to the project.
SCAQMD Rule 403	As identified in BACM AQ-1 the Project would need to comply with applicable SCAQMD Rules including, but not limited to Rule 403.
SCAQMD's Guidance Document for addressing Air Quality Issues in General Plans and Local Planning	These measures are not applicable to the proposed Project because the measures listed are aimed towards local governments as a guidance to reduce community exposure to source-specific air pollution impacts at the General Plan level.
Require the use of 2010 or newer haul trucks (e.g., material delivery trucks and soil import/export). In the event that the 2010 model year or newer diesel haul trucks cannot be obtained, provide documentation as information becomes available and use trucks that meet EPA measures such as incentives, phase-in schedules for clean trucks, etc.	This mitigation measure is not applicable to the proposed Project since Project-related construction emissions (regional and localized) would not exceed the applicable SCAQMD thresholds with application of BACMs.

Have truck routes clearly marked with trailblazer signs, so that trucks will not enter residential areas.	This mitigation measure is not applicable. Trucks will access the site from I-15. The Project does not have authority in the marking of truck routes.
Limit the daily number of trucks allowed at the Proposed Project to levels analyzed in the CEQA document. If higher daily truck volumes are anticipated to visit the site, the Lead Agency should commit to re-evaluating the Proposed Project through CEQA prior to allowing this land use or higher activity level.	This mitigation measure is not applicable as the proposed Project is not anticipating higher daily truck volumes to visiting the Project site.
Provide electric vehicle (EV) Charging Stations (see the discussion below regarding EV charging stations).	Applicable, the Project will provide the number of passenger car EV Charging Stations required by CALGreen.
Should the proposed Project generate significant regional emissions, the Lead Agency should require mitigation that requires accelerated phase in for non-diesel-powered trucks. For example, trucks can provide substantial reduction in health risks, and may be more financially feasible today due to reduce fuel costs compared to diesel. In the Final CEQA document, the Lead Agency should require a phase-in schedule for these cleaner operating trucks to reduce any significant adverse air quality impacts. SCAQMD staff is available to discuss the availability of current and upcoming truck technologies and incentive programs with the Lead Agency.	This mitigation measure is not applicable to the proposed Project since Project-related construction emissions (regional and localized) would not exceed the applicable SCAQMD thresholds with application of BACMs.
Trucks that can operate at least partially on electricity have the ability to substantially reduce the significant NO_X impacts from this project. Further, trucks that run at least partially on electricity are projected to become available during the life of the project as discussed in the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016-2040 RTP/SCS). It is important to make this electrical infrastructure available when the project is built so that it is ready when this technology becomes commercially available. The cost of installing electrical charging equipment onsite is significantly cheaper if completed when the project is built compared to retrofitting an existing building. Therefore, SCAQMD staff recommends the Lead Agency require the Proposed Project and other plan areas that allow truck parking to be constructed with the appropriate infrastructure to facilitate sufficient electric charging for trucks to plug-in. Similar to the City of Los Angeles requirements for all new projects, SCAQMD staff recommends that the Lead	This mitigation measure is not applicable to the proposed Project since Project-related construction emissions (regional and localized) would not exceed the applicable SCAQMD thresholds with application of BACMs.

Agency require at least 5% of all vehicle parking spaces (including for trucks) include EV charging stations. Further, electrical hookups should be provided at the onsite truck stop for truckers to plug in any onboard auxiliary equipment. At a minimum, electrical panels should appropriately be sized to allow for the future expanded use.	
Design the industrial building such that entrances and exits are such that trucks are not traversing past neighbor or other sensitive receptors.	The Project has been designed as such to ensure trucks would not idle off-site.
Design the industrial building such that any check-in point for trucks is well inside the proposed Project site to ensure that there are no trucks queuing outside the facility.	The Project has been designed as such to ensure trucks would not idle off-site.
Design the industrial building to ensure that truck traffic with the proposed Project site is located away from the property line(s) closest to its residential or sensitive receptor neighbors.	This mitigation measure is not applicable to the proposed Project as the Project site is not located adjacent to any residential land uses.
Restrict overnight parking in residential areas.	This mitigation measure is not applicable to the proposed Project as the Project site is not located adjacent to any residential land uses.
Establish overnight parking within the industrial building where trucks can rest overnight.	The Project would be required to comply with operating hours established by the City.
Establish area(s) within the Proposed Project site for repair needs.	It is unknown if any repairs would be done on-site at this time.
Develop, adopt and enforce truck routes both in and out of the city, and in and out of facilities.	This mitigation measure is not applicable to the proposed Project. The Project does not have regulatory authority to control truck routes.
Create a buffer zone of at least 300 meters (roughly 1,000 feet), which can be office space, employee parking, greenbelt, etc. between the proposed Project and sensitive receptors.	This mitigation measure is not applicable to the proposed Project as the Project site is not located adjacent to any residential land uses.
Maximize use of solar energy including solar panels; installing the maximum possible number of solar energy arrays on the building roofs and/or on the Project site to generate solar energy for the facility.	Although the proposed Project will not be providing solar panels, the Project will provide the infrastructure for these stations.
Maximize the planting of trees in landscaping and parking lots.	The Project will implement the planting of trees and landscaping consistent with City requirements.

Use light colored paving and roofing materials.	The Project will utilize light colored roofing consistent with the architectural design guidelines established by the City.
Utilize only Energy Star heating, cooling, and lighting devices, and appliances.	The Project will comply with this measure as it is required by SCAQMD.
Require use of electric or alternatively fueled sweepers with high-efficiency particulate air (HEPA) filters.	The Project will comply with the use of electric or alternatively fueled sweepers with HEPA filters as this measure is required by SCAQMD.
Use of water-based or low VOC cleaning products.	The Project will comply with this measure as it is required by SCAQMD.

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1 INTRODUCTION

This report presents the results of the air quality impact analysis (AQIA) prepared by Urban Crossroads, Inc., for the proposed The Homestead (Project). 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 thresholds established by the SCAQMD.

1.1 SITE LOCATION

The proposed The Homestead is located west of Archibald Avenue and on either side of Limonite Avenue, in the City of Eastvale, as shown on Exhibit 1-A. Chino Airport is located approximately one mile west of the Project site. Existing land uses in the Project study area include residential uses north, east, and southeast of the Project site, and existing agricultural use to the west and south (designated as future commercial use) of the Project site.

1.2 PROJECT DESCRIPTION

Exhibit 1-B illustrates the preliminary site plan. As indicated on Exhibit 1-B, the Project is proposed to consist of the following uses:

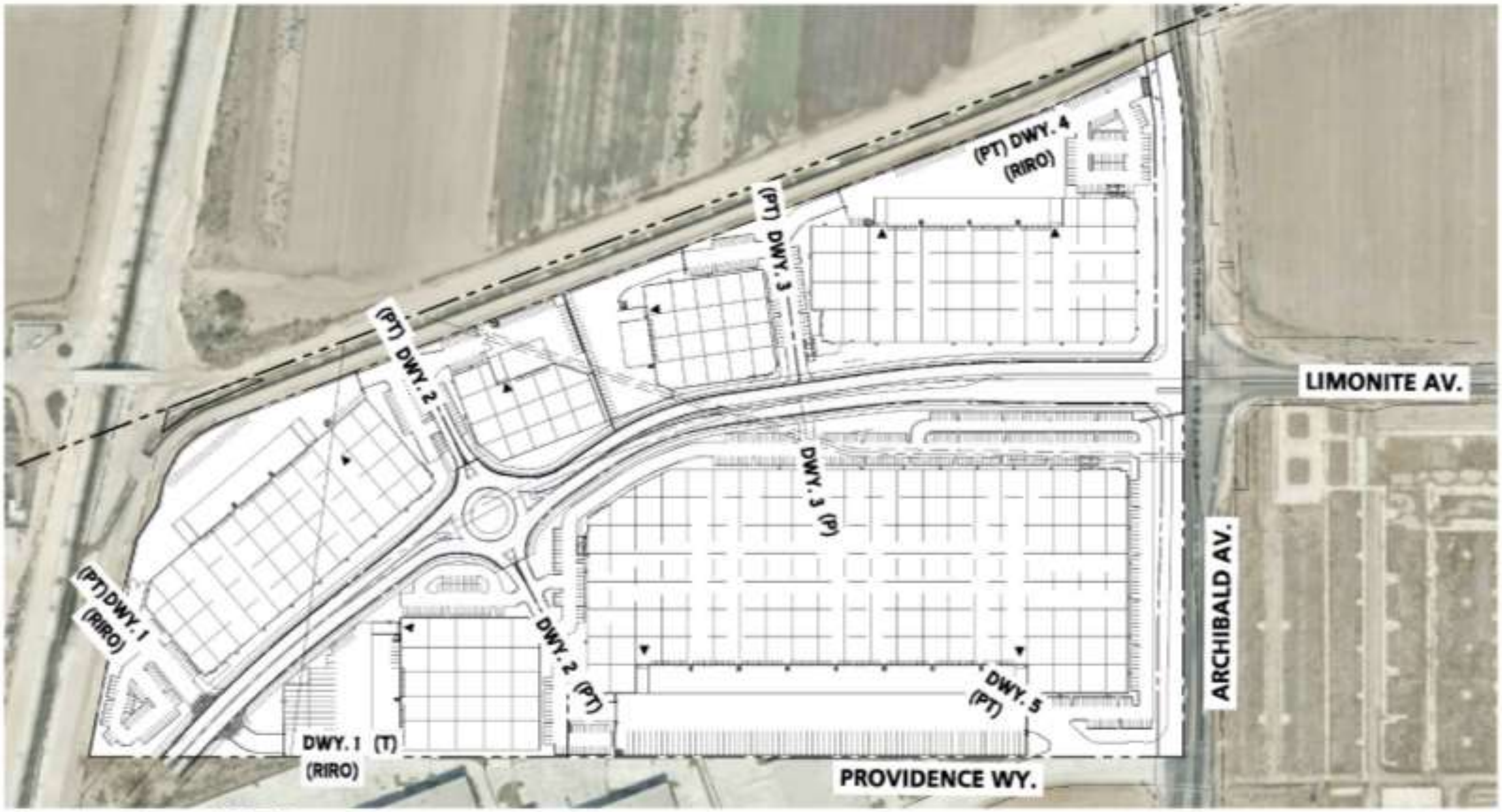
- 560,291 square feet (sf) of warehousing use
- 520,317 sf of high-cube fulfillment center use

Since the time this AQIA was prepared, the site plan has been updated. The current site plan shows 541,756 square feet of warehousing use and 507,631 square feet of high-cube fulfillment center warehouse use. These updated site plan building square footages are less intensive, and as such the number of trips and consequently emissions would decrease. However, for the purposes of this AQIA, the higher square footage (and therefore higher trip generation and consequently emissions) has been evaluated in an effort to conduct a conservative analysis and overstate as opposed to understate potential AQ impacts.

The Project is anticipated to be constructed in a single phase by the year 2021. At the time this air quality analysis was prepared, the future tenants of the proposed Project were unknown. This air study is intended to describe emission impacts associated with the expected typical 24-hour, seven days per week operational activities at the Project site.

EXHIBIT 1-A: LOCATION MAP

EXHIBIT 1-B: SITE PLAN



LEGEND:

RIRO = RIGHT-IN/RIGHT-OUT ONLY ACCESS
P = PASSENGER CARS ONLY
T = TRUCKS ONLY
PT = PASSENGER CARS AND TRUCKS

N

NOTE: UNLESS NOTED, ALL DRIVEWAYS ARE ASSUMED TO BE FULL ACCESS.

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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 SCAB within the jurisdiction of SCAQMD (4). 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. As previously stated, the Project site is located within the SCAB, 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 SCAB is bounded 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 bounded 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 bounded 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 14½ 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 NO_X 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 SCAB 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 onshore 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 CRITERIA POLLUTANTS

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 health effects are identified below (5):

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
CO	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 SCAB. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.	Any source that burns fuel such as automobiles, trucks, heavy construction equipment, farming equipment and residential heating.	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.

Criteria Pollutant	Description	Sources	Health Effects
Sulfur Dioxide (SO_2)	SO_2 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 SO_2 oxidizes in the atmosphere, it forms sulfates (SO_4). Collectively, these pollutants are referred to as sulfur oxides (SO_X)	Coal or oil burning power plants and industries, refineries, diesel engines	A few minutes of exposure to low levels of SO_2 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 SO_2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO_2. Animal studies suggest that despite SO_2 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 SO_2 levels. In these studies, efforts to separate the effects of SO_2 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.

Criteria Pollutant	Description	Sources	Health Effects
NO_X	NO_X consist of nitric oxide (NO), nitrogen dioxide (NO_2) and nitrous oxide (N_2O) and are formed when nitrogen (N_2) combines with oxygen (O_2). 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 during combustion processes and are major contributors to smog formation and acid deposition. NO_2 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, NO_2 is the most abundant in the atmosphere. As ambient concentrations of NO_2 are related to traffic density, commuters in heavy traffic may be exposed to higher concentrations of NO_2 than those indicated by regional monitoring station.	Any source that burns fuel such as automobiles, trucks, heavy construction equipment, farming equipment and residential heating.	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 NO_2 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 NO_2 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 NO_2 considerably higher than ambient concentrations result 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 NO_2.
Ozone (O_3)	O_3 is a highly reactive and unstable gas that is formed when VOCs and NO_X, both byproducts of internal combustion engine exhaust, undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally	Formed when reactive organic gases (ROG) and nitrogen oxides react in the presence of sunlight. ROG sources	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.

Criteria Pollutant	Description	Sources	Health Effects
	highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.	include any source that burns fuels, (e.g., gasoline, natural gas, wood, oil) solvents, petroleum processing and storage and pesticides.	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 outdoor 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.
Particulate Matter	PM_{10} (Particulate Matter less than 10 microns): A major air pollutant consisting of tiny solid or liquid particles of soot, dust,	Sources of PM_{10} include road dust, windblown dust and construction. Also	A consistent correlation between elevated ambient fine particulate matter (PM_{10} and $PM_{2.5}$) levels and an

Criteria Pollutant	Description	Sources	Health Effects
	smoke, fumes, and aerosols. Particulate matter pollution is a major cause of reduce visibility (haze) which is caused by the scattering of light and consequently the significant reduction air clarity. 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. Additionally, it should be noted that PM_{10} is considered a criteria air pollutant. $PM_{2.5}$ (Particulate Matter less than 2.5 microns): A similar air pollutant to PM_{10} 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 SO_2 release from power plants and industrial facilities and nitrates that are formed from NO_X 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. $PM_{2.5}$ is a criteria air pollutant.	formed from other pollutants (acid rain, NO_X, SO_X, organics). Incomplete combustion of any fuel. $PM_{2.5}$ comes from fuel combustion in motor vehicles, equipment and industrial sources, residential and agricultural burning. Also formed from reaction of other pollutants (acid rain, NO_X, SO_X, organics).	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 lifespan, and an increased mortality from lung cancer. Daily fluctuations in $PM_{2.5}$ 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 long term 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 PM_{10} and $PM_{2.5}$.
Volatile Organic Compounds (VOC)	VOCs 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	Organic chemicals are widely used as ingredients in household products. Paints, varnishes and wax all contain organic solvents, as do many cleaning, disinfecting,	Breathing VOCs can irritate the eyes, nose and throat, can cause difficulty breathing and nausea, and can damage the central nervous system as well as other organs. Some VOCs can cause cancer. Not all VOCs have all these health

Criteria Pollutant	Description	Sources	Health Effects
	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 O_3, which is a criteria pollutant. The terms VOC and ROG (see below) interchangeably.	cosmetic, degreasing and hobby products. Fuels are made up of organic chemicals. All of these products can release organic compounds while you are using them, and, to some degree, when they are stored.	effects, though many have several.
ROG	Similar to VOC, ROGs 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 O_3, which is a criteria pollutant. The terms ROG and VOC (see previous) interchangeably.	Sources similar to VOCs.	Health effects similar to VOCs.
Lead (Pb)	Lead is a heavy metal that is highly persistent in the environment and is considered a criteria pollutant. In the past, the primary source of lead in the air was emissions from vehicles burning leaded gasoline. The major sources of lead emissions are ore and metals processing, particularly lead smelters, and piston-engine aircraft operating on leaded aviation gasoline. Other stationary sources include	Metal smelters, resource recovery, leaded gasoline, deterioration of lead paint.	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

Criteria Pollutant	Description	Sources	Health Effects
	waste incinerators, utilities, and lead-acid battery manufacturers. It should be noted that the Project does not include operational activities such as metal processing or lead acid battery manufacturing. As such, the Project is not anticipated to generate a quantifiable amount of lead emissions.		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.
Odor	Odor means the perception experienced by a person when one or more chemical substances in the air come into contact with the human olfactory nerves.	Odors can come from many sources including animals, human activities, industry, natures, and vehicles.	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.

2.5 EXISTING AIR QUALITY

Existing air quality is measured at established SCAQMD air quality monitoring stations. Monitored air quality is evaluated 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 are shown in Table 2-2 (6).

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. At the time of this AQIA, the most recent state and federal standards were updated by CARB on May ,4 2016 and are presented in Table 2-2. The air quality in a region is considered to be in attainment by the state if the measured ambient air pollutant levels for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, PM_{10}, and $PM_{2.5}$ are not to be exceeded. All others are not to be equaled or exceeded. It should be noted that the three-year period is presented for informational purposes and is not the basis for how the State assigns attainment status. Attainment status for a pollutant means that the Air District meets the standards set by the EPA or the California EPA. Conversely, nonattainment means that an area has monitored air quality that does not meet the NAAQS or CAAQS standards. In order to improve air quality in nonattainment areas, a State Implementation Plan (SIP) is drafted. The SIP outlines the measures that the state will take to improve air quality. Once nonattainment areas meet the standards and additional redesignation requirements, the EPA will designate the area as a maintenance area (7).

TABLE 2-2: AMBIENT AIR QUALITY STANDARDS (1 OF 2)

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)[8]	1 Hour	0.09 ppm (180 $\mu g/m^3$)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 $\mu g/m^3$)		0.070 ppm (137 $\mu g/m^3$)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 $\mu g/m^3$	Gravimetric or Beta Attenuation	150 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 $\mu g/m^3$		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 $\mu g/m^3$	Gravimetric or Beta Attenuation	12.0 $\mu g/m^3$	15 $\mu g/m^3$	
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)[10]	1 Hour	0.18 ppm (339 $\mu g/m^3$)	Gas Phase Chemiluminescence	100 ppb (188 $\mu g/m^3$)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 $\mu g/m^3$)		0.053 ppm (100 $\mu g/m^3$)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 $\mu g/m^3$)	Ultraviolet Fluorescence	75 ppb (196 $\mu g/m^3$)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 $\mu g/m^3$)	
	24 Hour	0.04 ppm (105 $\mu g/m^3$)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 $\mu g/m^3$	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 $\mu g/m^3$ (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 $\mu g/m^3$		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 $\mu g/m^3$	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 $\mu g/m^3$)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 $\mu g/m^3$)	Gas Chromatography			

See footnotes on next page ...

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TABLE 2-2: AMBIENT AIR QUALITY STANDARDS (2 OF 2)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

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2.6 REGIONAL AIR QUALITY

Air pollution contributes to a wide variety of adverse health effects. The EPA has established NAAQS for six of the most common air pollutants: O_3, PM_{10}, $PM_{2.5}$, CO, NO_2, SO_2 and Pb which are known as criteria pollutants. The SCAQMD monitors levels of various criteria pollutants at 37 permanent monitoring stations and 5 single-pollutant source Pb air monitoring sites throughout the air district (8). On February 20, 2019, CARB posted the 2018 amendments to the state and national area designations. See Table 2-3 for attainment designations for the SCAB (9). Appendix 2.1 provides geographic representation of the state and federal attainment status for applicable criteria pollutants within the SCAB.

TABLE 2-3: ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SCAB

Criteria Pollutant	State Designation	Federal Designation
O_3 – 1-hour standard	Nonattainment	--
O_3 – 8-hour standard	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Attainment	Unclassifiable/Attainment
NO_2	Attainment	Unclassifiable/Attainment
SO_2	Unclassifiable/Attainment	Unclassifiable/Attainment
Pb[2]	Attainment	Unclassifiable/Attainment

Note: See Appendix 2.1 for a detailed map of State/National Area Designations within the SCAB
"-" = The national 1-hour O_3 standard was revoked effective June 15, 2005

2.7 LOCAL AIR QUALITY

The Project site is located within the Source Receptor Area (SRA) 22 (10). Within SRA 22, the SCAQMD Corona/Norco Area monitoring station is located 3.77 miles south of the Project site and is the nearest long-term air quality monitoring site for PM_{10}. Relative to the Project site, the nearest long-term air quality monitoring site for CO is the SCAQMD I-10 Near Road monitoring station (SRA 33), located 7.35 miles northeast of the Project site. The SCAQMD CA-60 Near Road monitoring station is the nearest monitoring station located approximately 3.97 miles north of the Project site that monitors NO_2 and $PM_{2.5}$ (SRA 33). SCAQMD Metropolitan Riverside County monitoring station (SRA 23) is located approximately 10.18 miles east of the Project site and is the nearest long-term air quality monitoring site for O_3. It should be noted that the I-10 Near Road Station, CA-60 Near Road station, and Metropolitan Riverside County monitoring station were utilized in lieu of the Corona/Norco Area monitoring station only in instances where data was not available.

The most recent three (3) years of data available is shown on Table 2-4 and identifies the number of days ambient air quality standards were exceeded for the study area, which is considered to

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

be representative of the local air quality at the Project site. Data for O_3, CO, NO_2, PM_{10}, and $PM_{2.5}$ for 2016 through 2018 was obtained from the SCAQMD Air Quality Data Tables (11). Additionally, data for SO_2 has been omitted as attainment is regularly met in the SCAB and few monitoring stations measure SO_2 concentrations.

TABLE 2-4: PROJECT AREA AIR QUALITY MONITORING SUMMARY 2016-2018

POLLUTANT	STANDARD	YEAR		
		2016	2017	2018
O_3				
Maximum Federal 1-Hour Concentration (ppm)		0.142	0.145	0.123
Maximum Federal 8-Hour Concentration (ppm)		0.104	0.118	0.101
Number of Days Exceeding Federal 1-Hour Standard	>0.07 ppm	1	2	0
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	33	47	22
Number of Days Exceeding Federal 8-Hour Standard	> 0.070 ppm	69	81	53
Number of Days Exceeding State 8-Hour Standard	> 0.070 ppm	71	81	53
CO				
Maximum Federal 1-Hour Concentration	> 35 ppm	1.700	4.200	1.600
Maximum Federal 8-Hour Concentration	> 20 ppm	1.300	1.300	1.300
NO_2				
Maximum Federal 1-Hour Concentration	> 0.100 ppm	0.009	0.009	0.008
Annual Federal Standard Design Value		0.003	0.003	0.003
PM_{10}				
Maximum Federal 24-Hour Concentration (μg/m^3)	> 150 μg/m^3	62.000	85.000	100.000
Annual Federal Arithmetic Mean (μg/m^3)		31.700	31.200	30.200
Number of Days Exceeding Federal 24-Hour Standard	> 150 μg/m^3	0	0	0
Number of Days Exceeding State 24-Hour Standard	> 50 μg/m^3	7	7	3
$PM_{2.5}$				
Maximum Federal 24-Hour Concentration (μg/m^3)	> 35 μg/m^3	44.140	44.800	47.900
Annual Federal Arithmetic Mean (μg/m^3)	> 12 μg/m^3	14.730	14.430	14.310
Number of Days Exceeding Federal 24-Hour Standard	> 35 μg/m^3	6	7	5

Source: Data for O_3, CO, NO_2, PM_{10}, and $PM_{2.5}$ was obtained from SCAQMD Air Quality Data Tables.

2.8 REGULATORY BACKGROUND

2.8.1 FEDERAL REGULATIONS

The EPA is responsible for setting and enforcing the NAAQS for O_3, CO, NO_x, SO_2, PM_{10}, and Pb (12). The 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 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 (13). The CAA also mandates that states submit and implement 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) (14) (15). Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O_3, NO_2, SO_2, PM_{10}, CO, $PM_{2.5}$, and Pb. The NAAQS were amended in July 1997 to include an additional standard for O_3 and to adopt a NAAQS for $PM_{2.5}$. Table 2-3 (previously presented) provides the NAAQS within the SCAB.

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 NO_X. NO_X is a collective term that includes all forms of nitrogen oxides (NO, NO_2, NO_3) which are emitted as byproducts of the combustion process.

2.7.2 CALIFORNIA REGULATIONS

California Air Resource Board. The CARB, which became part of the CalEPA 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. AB 2595 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 (16) (12).

Local air quality management districts, such as the SCAQMD, regulate air emissions from stationary sources such as commercial and 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, NO_X, CO and PM_{10}. However, air basins may use alternative emission reduction strategy that achieves a reduction of less than five percent per year under certain circumstances.

Title 24 Energy Efficiency Standards and California Green Building Standards. California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas (GHG) emissions. The 2019 version of Title 24 was adopted by the California Energy Commission (CEC) and will become effective on January 1, 2020. As such, the analysis herein assumes compliance with the 2019 Title 24 Standards.

The CEC indicates that the 2019 Title 24 standards may require solar photovoltaic systems for new homes, establish requirements for newly constructed healthcare facilities, encourage demand responsive technologies for residential buildings, update indoor and outdoor lighting for nonresidential buildings. The CEC anticipates that single-family homes built with the 2019 standards will use approximately 7 percent less energy compared to the residential homes built under the 2016 standards. Additionally, after implementation of solar photovoltaic systems, homes built under the 2019 standards will about 53 percent less energy than homes built under the 2016 standards. Nonresidential buildings will use approximately 30 percent less energy due to lighting upgrades (17).

California Code of Regulations, Title 24, Part 11: California Green Building Standards Code (CALGreen) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect on January 1, 2011, and is administered by the California Building Standards Commission. CALGreen is updated on a regular basis, with the most recent approved update consisting of the 2019 California Green Building Code Standards that will be effective January 1, 2020. Local jurisdictions are permitted to adopt more stringent requirements, as state law provides methods for local enhancements. CALGreen recognizes that many jurisdictions have developed existing construction and demolition ordinances and defers to them as the ruling guidance provided, they establish a minimum 65 percent diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. The State Building Code provides the minimum standard that buildings must meet in order to be certified for occupancy, which is generally enforced by the local building official. 2019 CALGreen standards are applicable to the Project and require (18):

- Short-term bicycle parking. If the new project or an additional alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5 percent of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- Long-term bicycle parking. For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5 percent of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility (5.106.4.1.2).
- Designated parking. In new projects or additions to alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- Construction waste management. Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1. 5.405.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent (5.408.1).
- Excavated soil and land clearing debris. 100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phase project, such material may be stockpiled on site until the storage site is developed (5.408.3).
- Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive (5.410.1).
- Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
  - Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush (5.303.3.1)
  - Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush (5.303.3.2.1). The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush (5.303.3.2.2).
  - Showerheads. Single showerheads shall have a minimum flow rate of not more than 1.8 gallons per minute and 80 psi (5.303.3.3.1). When a shower is served by more than one showerhead, the combine flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi (5.303.3.3.2).
  - Faucets and fountains. Nonresidential lavatory faucets shall have a maximum flow rate of note more than 0.5 gallons per minute at 60 psi (5.303.3.4.1). Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute of 60 psi (5.303.3.4.2). Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute (5.303.3.4.3). Metering faucets shall not deliver more than 0.20 gallons per cycle (5.303.3.4.4). Metering faucets for wash fountains shall have a maximum flow rate not more than 0.20 gallons per cycle (5.303.3.4.5).

- Outdoor portable water use in landscaped areas. Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient (MWELO), whichever is more stringent (5.304.1).
- Water meters. Separate submeters or metering devices shall be installed for new buildings or additions in excess of 50,000 sf or for excess consumption where any tenant within a new building or within an addition that is project to consume more than 1,000 gal/day (5.303.1.1 and 5.303.1.2).
- Outdoor water use in rehabilitated landscape projects equal or greater than 2,500 sf. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 sf requiring a building or landscape permit (5.304.3).
- Commissioning. For new buildings 10,000 sf and over, building commissioning shall b included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements (5.410.2).

2.8.3 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 (19). 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 3.9.

2.9 REGIONAL AIR QUALITY IMPROVEMENT

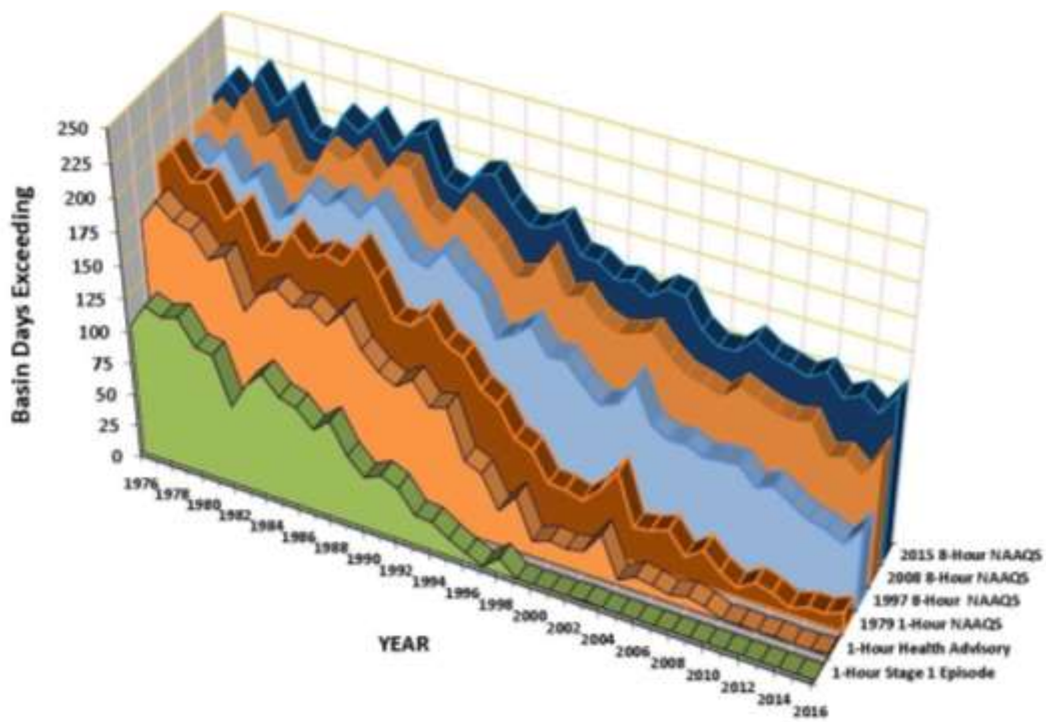
The Project is within the jurisdiction of the SCAQMD. In 1976, California adopted the Lewis Air Quality Management Act which created SCAQMD from a voluntary association of air pollution control districts in Los Angeles, Orange, Riverside, and San Bernardino counties. The geographic area of which SCAQMD consists is known as the SCAB. SCAQMD develops comprehensive plans and regulatory programs for the region to attain federal standards by dates specified in federal law. The agency is also responsible for meeting state standards by the earliest date achievable, using reasonably available control measures.

SCAQMD rule development through the 1970s and 1980s resulted in dramatic improvement in SCAB air quality. Nearly all control programs developed through the early 1990s relied on (i) the development and application of cleaner technology; (ii) add-on emission controls, and (iii) uniform CEQA review throughout the SCAB. Industrial emission sources have been significantly reduced by this approach and vehicular emissions have been reduced by technologies implemented at the state level by CARB.

As discussed above, the SCAQMD is the lead agency charged with regulating air quality emission reductions for the entire SCAB. SCAQMD created AQMPs which represent a regional blueprint for achieving healthful air on behalf of the 16 million residents of the SCAB. The 2012 AQMP states, "the remarkable historical improvement in air quality since the 1970's is the direct result of Southern California's comprehensive, multiyear strategy of reducing air pollution from all sources as outlined in its AQMPs," (20).

Ozone, NO_X, VOC, and CO have been decreasing in the SCAB since 1975 and are projected to continue to decrease through 2020 (21). These decreases result primarily from motor vehicle controls and reductions in evaporative emissions. Although vehicle miles traveled in the SCAB continue to increase, NO_X and VOC levels are decreasing because of the mandated controls on motor vehicles and the replacement of older polluting vehicles with lower-emitting vehicles. NO_X emissions from electric utilities have also decreased due to use of cleaner fuels and renewable energy. Ozone contour maps show that the number of days exceeding the national 8-hour standard has decreased between 1997 and 2007. In the 2007 period, there was an overall decrease in exceedance days compared with the 1997 period. Ozone levels in the SCAB have decreased substantially over the last 30 years as shown in Table 2-5 (22). Today, the maximum measured concentrations are approximately one-third of concentrations within the late 70's.

TABLE 2-5: SCAB OZONE TREND



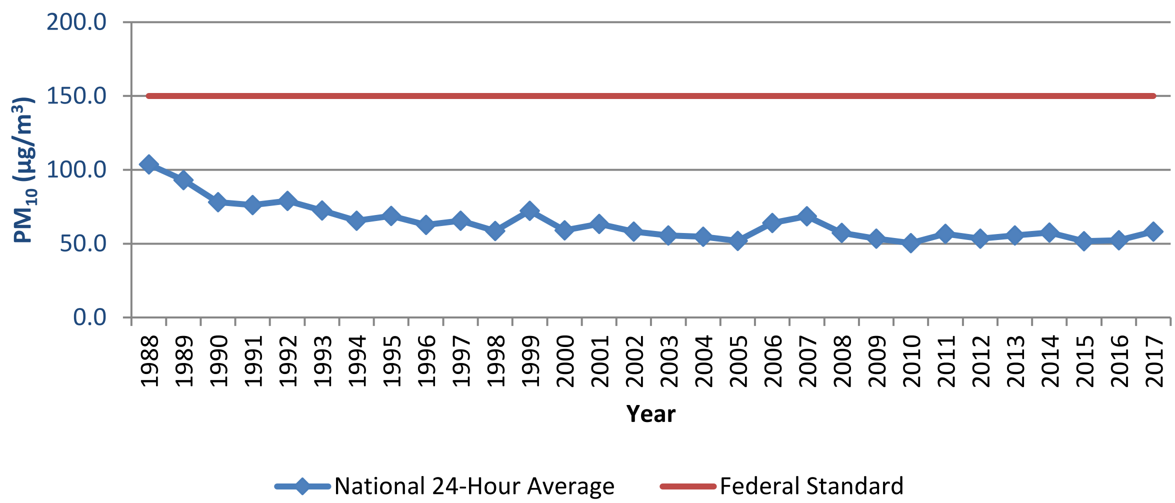
Source: SCAQMD

The overall trends of PM_{10} and $PM_{2.5}$ levels in the air (not emissions) show an overall improvement since 1975. Direct emissions of PM_{10} have remained somewhat constant in the SCAB and direct emissions of $PM_{2.5}$ have decreased slightly since 1975. Area wide sources (fugitive dust from roads, dust from construction and demolition, and other sources) contribute the greatest amount of direct particulate matter emissions.

As with other pollutants, the most recent PM_{10} statistics show an overall improvement as illustrated in Tables 2-6 and 2-7. During the period for which data are available, the 24-hour national annual average concentration for PM_{10} decreased by approximately 44 percent, from

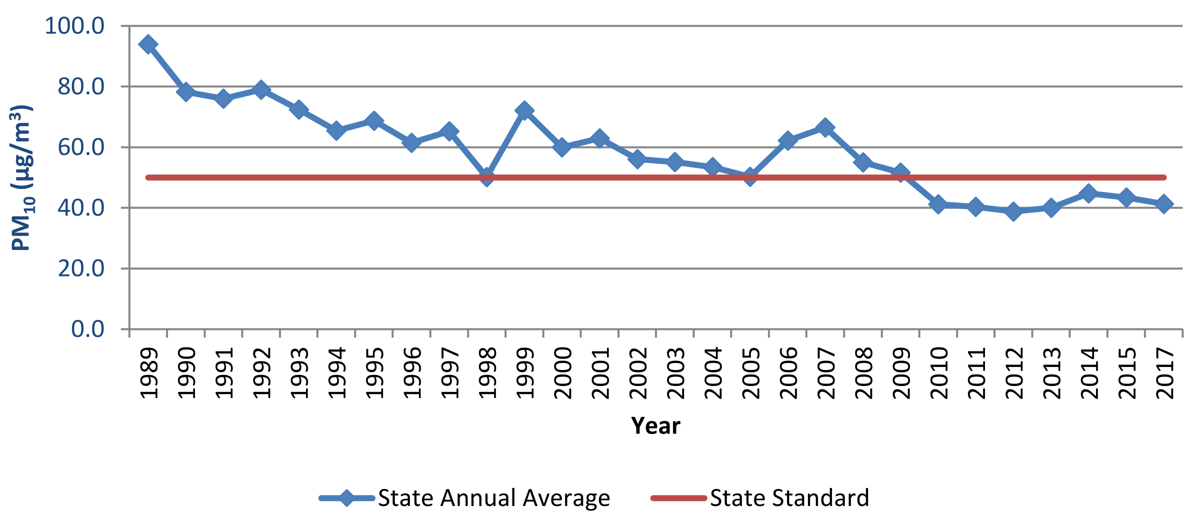
103.7 µg/m³ in 1988 to 58.2 µg/m³ in 2017 (23). Although the values are below the federal standard, it should be noted that there are days within the year where the concentrations will exceed the threshold. The 24-hour state annual average fo emissions for PM_{10}, have decreased by approximately 56 percent since 1988 (23). Although data in the late 1990's show some variability, this is probably due to the advances in meteorological science rather than a change in emissions. Similar to the ambient concentrations, the calculated number of days above the 24-hour PM_{10} standards has also shown an overall drop.

TABLE 2-6: SCAB AVERAGE 24-HOUR CONCENTRATION PM_{10} TREND (BASED ON FEDERAL STANDARD) [1]



Source: CARB
[1] Some year have been omitted from the table as insufficient data (or no data) has been reported. Values of "0" have also been omitted.

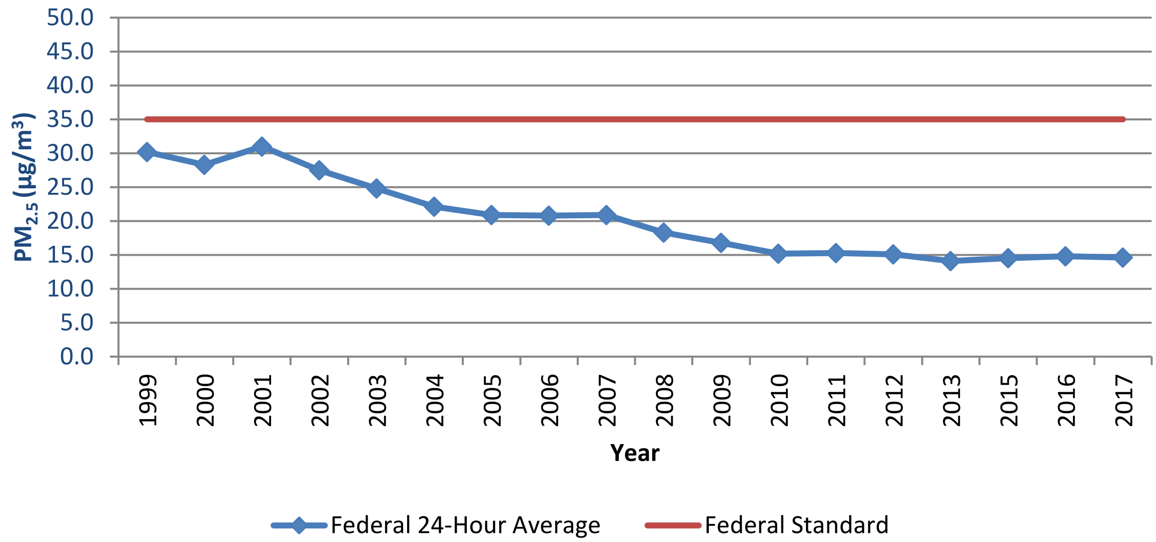
TABLE 2-7: SCAB ANNUAL AVERAGE CONCENTRATION PM_{10} TREND (BASED ON STATE STANDARD)[1]



Source: CARB
[1] Some year have been omitted from the table as insufficient data (or no data) has been reported. Values of "0" have also been omitted.

Tables 2-8 and 2-9 shows the most recent 24-hour average $PM_{2.5}$ concentrations in the SCAB from 1999 through 2017. Overall, the national and state annual average concentrations have decreased by almost 52 percent and 30 percent respectively (23). The SCAB is currently designated as nonattainment for the State and federal $PM_{2.5}$ standards.

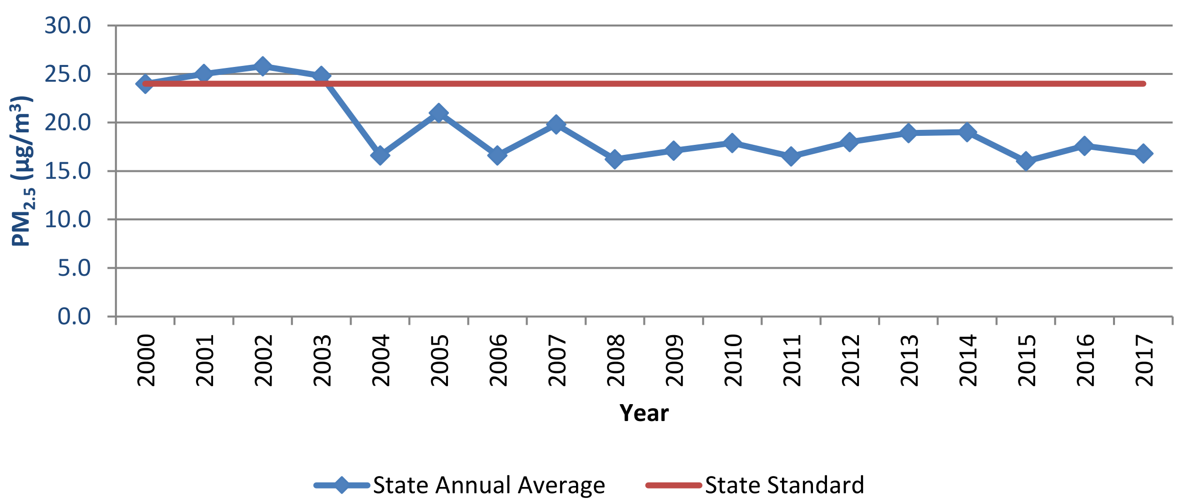
TABLE 2-8: SCAB 24-HOUR AVERAGE CONCENTRATION $PM_{2.5}$ TREND (BASED ON FEDERAL STANDARD)[1]



Source: CARB

[1] Some year have been omitted from the table as insufficient data (or no data) has been reported. Values of "0" have also been omitted.

TABLE 2-9: SCAB ANNUAL AVERAGE CONCENTRATION $PM_{2.5}$ TREND (BASED ON STATE STANDARD)[1]



Source: CARB

[1] Some year have been omitted from the table as insufficient data (or no data) has been reported. Values of "0" have also been omitted.

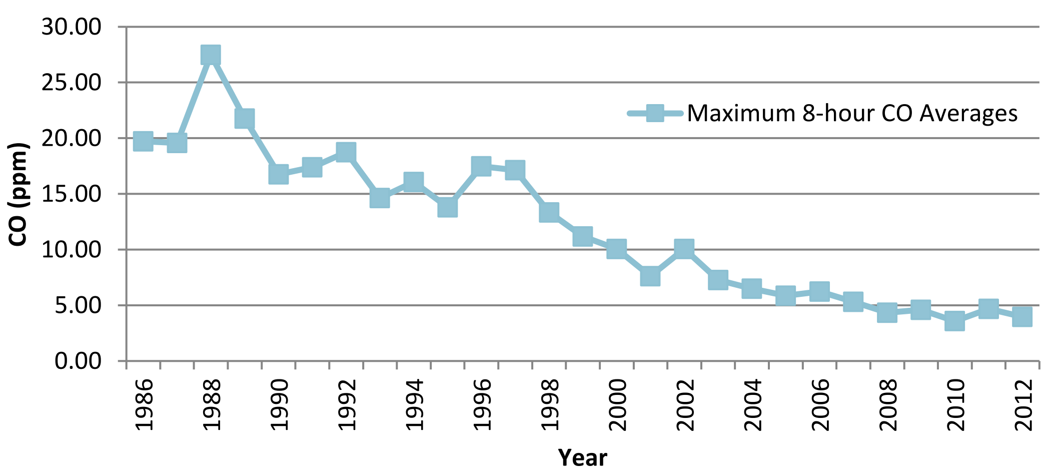
While the 2012 AQMP PM_{10} attainment demonstration and the 2015 associated supplemental SIP submission indicated that attainment of the 24-hour standard was predicted to occur by the end of 2015, it could not anticipate the effect of the ongoing drought on the measured $PM_{2.5}$.

The 2006 to 2010 base period used for the 2012 attainment demonstration had near-normal rainfall. While the trend of $PM_{2.5}$- equivalent emission reductions continued through 2015, the severe drought conditions contributed to the $PM_{2.5}$ increases observed after 2012. As a result of the disrupted progress toward attainment of the federal 24-hour $PM_{2.5}$ standard, SCAQMD submitted a request and the EPA approved, in January 2016, a “bump up” to the nonattainment classification from “moderate” to “serious,” with a new attainment deadline as soon as practicable, but not beyond December 31, 2019.

In March 2017, the AQMD released the Final 2016 AQMP. The 2016 AQMP continues to evaluate current integrated strategies and control measures to meet the NAAQS, as well as, explore new and innovative methods to reach its goals. Some of these approaches include utilizing incentive programs, recognizing existing co-benefit programs from other sectors, and developing a strategy with fair-share reductions at the federal, state, and local levels (24). Similar to the 2012 AQMP, the 2016 AQMP incorporates scientific and technological information and planning assumptions, including the 2016 Regional Transportation Plan/Sustainable Communities Strategy RTP/SCS and updated emission inventory methodologies for various source categories (19).

The most recent CO concentrations in the SCAB are shown in Table 2-10 (23). CO concentrations in the SCAB have decreased markedly — a total decrease of more about 80 percent in the peak 8-hour concentration since 1986. It should be noted 2012 is the most recent year where 8-hour CO averages and related statistics are available in the SCAB. The number of exceedance days has also declined. The entire SCAB is now designated as attainment for both the state and national CO standards. Ongoing reductions from motor vehicle control programs should continue the downward trend in ambient CO concentrations.

TABLE 2-10: SCAB 24-HOUR AVERAGE CONCENTRATION CO TREND[1]



Source: CARB

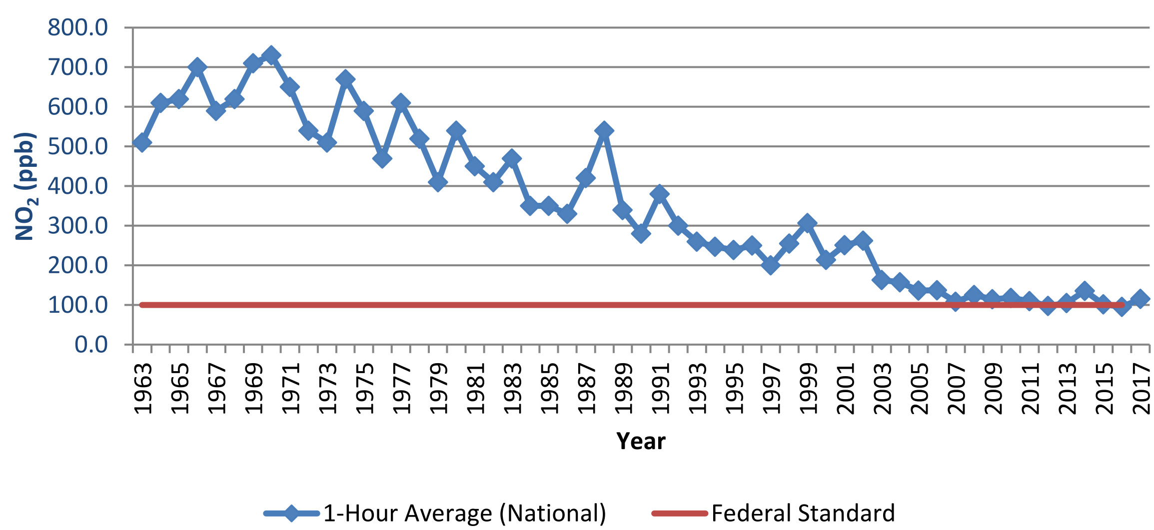
[1] The most recent year where 8-hour concentration data is available is 2012.

Part of the control process of the SCAQMD's duty to greatly improve the air quality in the SCAB is the uniform CEQA review procedures required by SCAQMD's CEQA Handbook (25). The single threshold of significance used to assess Project direct and cumulative impacts has in fact "worked" as evidenced by the track record of the air quality in the SCAB dramatically improving over the course of the past decades. As stated by the SCAQMD, the District's thresholds of significance are based on factual and scientific data and are therefore appropriate thresholds of significance to use for this Project.

The most recent NO_2 data for the SCAB is shown in Tables 2-11 and 2-12 (23). Over the last 50 years, NO_2 values have decreased significantly; the peak 1-hour national and state averages for 2017 is approximately 77 percent lower than what it was during 1963. The SCAB attained the State 1-hour NO_2 standard in 1994, bringing the entire State into attainment. A new state annual average standard of 0.030 parts per million (ppm) was adopted by the CARB in February 2007 (26). The new standard is just barely exceeded in the South Coast. NO_2 is formed from NO_X emissions, which also contribute to ozone. As a result, the majority of the future emission control measures will be implemented as part of the overall ozone control strategy. Many of these control measures will target mobile sources, which account for more than three-quarters of California's NO_X emissions. These measures are expected to bring the South Coast into attainment of the State annual average standard.

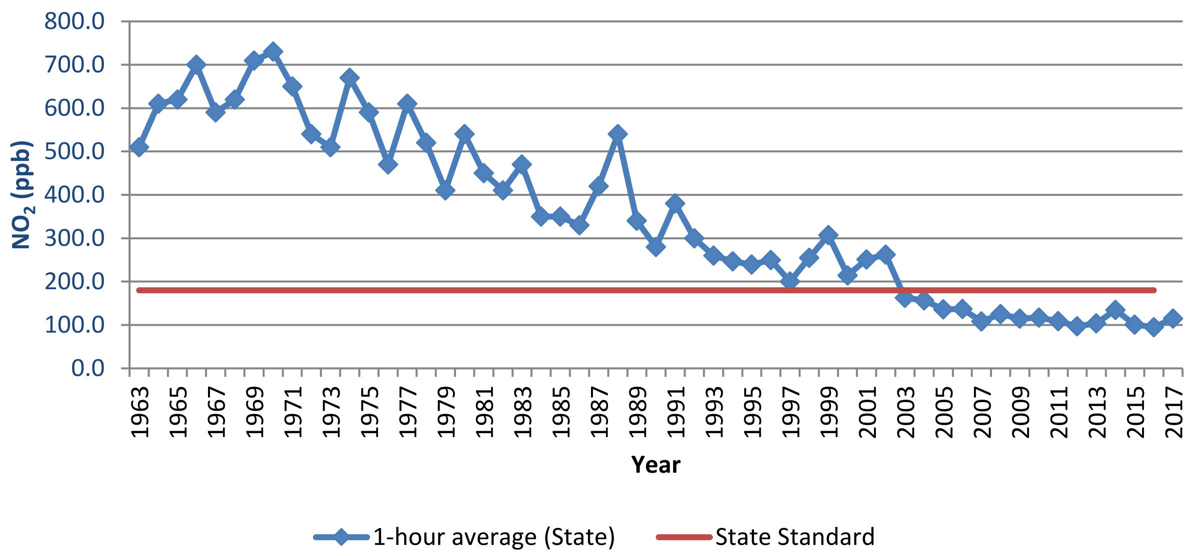
The American Lung Association website includes data collected from State air quality monitors that are used to compile an annual State of the Air report. The latest State of the Air Report compiled for the SCAB was in 2017 (27). As noted in this report, air quality in the SCAB has significantly improved in terms of both pollution levels and high pollution days over the past three decades. The area's average number of high ozone days dropped from 230 days in the initial 2000 State of the Air report (1996–1998) to 142 days in the 2017 report. The region has also seen dramatic reduction in particle pollution since the initial 2000 State of the Air report (27).

TABLE 2-11: SCAB 1-HOUR AVERAGE CONCENTRATION NO_2 TREND (BASED ON FEDERAL STANDARD)



Source: CARB

TABLE 2-12: SCAB 1-HOUR AVERAGE CONCENTRATION NO_2 TREND (BASED ON STATE STANDARD)



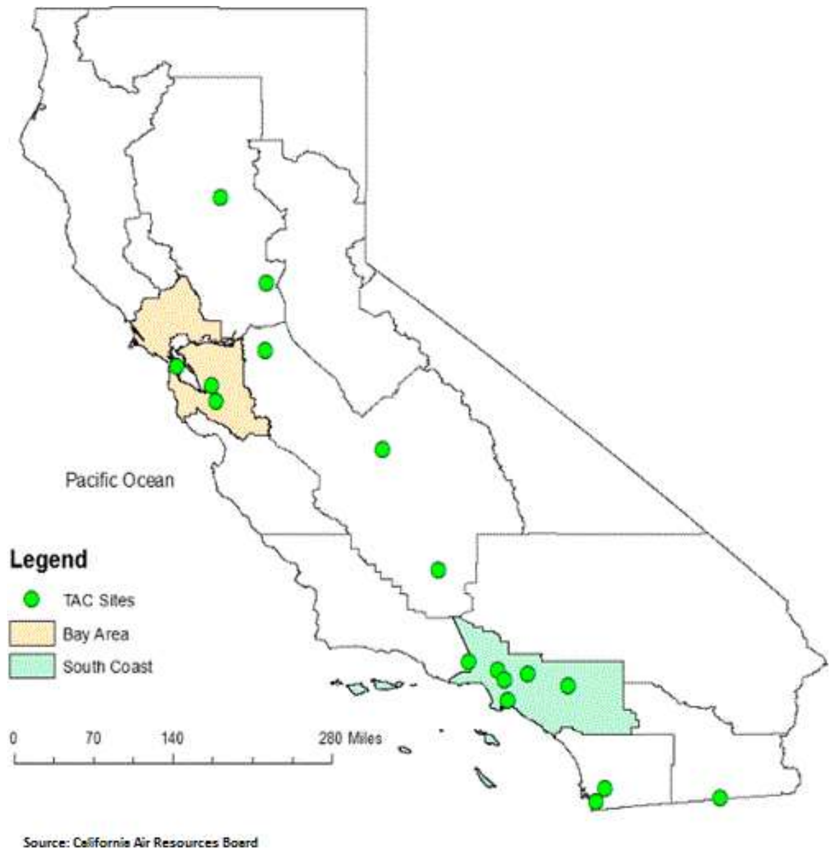
Source: CARB

TOXIC AIR CONTAMINANTS (TACS) TRENDS

In 1984, as a result of public concern for exposure to airborne carcinogens, the CARB adopted regulations to reduce the amount of air toxic contaminant emissions resulting from mobile and area sources, such as cars, trucks, stationary products, and consumer products. According to the *Ambient and Emission Trends of Toxic Air Contaminants in California* journal article (28) which was prepared for CARB, results show that between 1990-2012, ambient concentration and emission trends for the seven TACs responsible for most of the known cancer risk associated with airborne exposure in California have declined significantly (between 1990 and 2012). The seven TACs studied include those that are derived from mobile sources: diesel particulate matter (DPM), benzene, and 1,3-butadiene; those that are derived from stationary sources: perchloroethylene and hexavalent chromium; and those derived from photochemical reactions of emitted VOCs: formaldehyde and acetaldehyde[3]. TACs data was gathered at monitoring sites from both the Bay Area and SCAB, as shown on Exhibit 2-A; Several of the sites in the SCAB include Reseda, Compton, Rubidoux, Burbank, and Fontana. The decline in ambient concentration and emission trends of these TACs are a result of various regulations CARB has implemented to address cancer risk.

[3] It should be noted that ambient DPM concentrations are not measured directly. Rather, a surrogate method using the coefficient of haze (COH) and elemental carbon (EC) is used to estimate DPM concentrations.

EXHIBIT 2-A: CALIFORNIA TOXIC AIR CONTAMINANT SITES

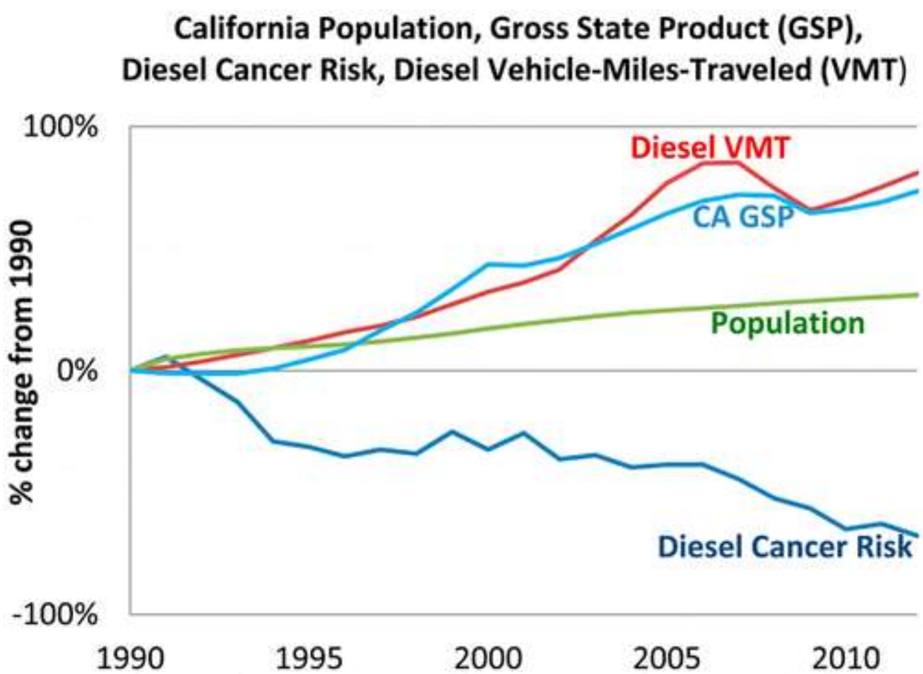


Mobile Source TACs

CARB introduced two programs that aimed at reducing mobile emissions for light and medium duty vehicles through vehicle emissions controls and cleaner fuel. In California, light-duty vehicles sold after 1996 are equipped with California's second-generation On-Board Diagnostic (OBD-II) system. The OBD II system monitors virtually every component that can affect the emission performance of the vehicle to ensure that the vehicle remains as clean as possible over its entire life and assists repair technicians in diagnosing and fixing problems with the computerized engine controls. If a problem is detected, the OBD II system illuminates a warning lamp on the vehicle instrument panel to alert the driver. This warning lamp typically contains the phrase Check Engine or Service Engine Soon. The system will also store important information about the detected malfunction so that a repair technician can accurately find and fix the problem. ARB has recently developed similar OBD requirements for heavy-duty vehicles over 14,000 lbs. CARB's phase II Reformulated Gasoline (RFG-2) regulation, adopted in 1996, also led to a reduction of mobile source emissions. Through such regulations, benzene levels declined 88% from 1990-2012. 1,3-Butadiene concentrations also declined 85% from 1990-2012 as a result of the use of reformulated gasoline and motor vehicle regulations (28).

In 2000, CARB's Diesel Risk Reduction Plan (DRRP) recommended the replacement and retrofit of diesel-fueled engines and the use of ultra-low-sulfur (<15ppm) diesel fuel. As a result of these measures, DPM concentrations have declined 68% since 2000, even though the state's population increased 31% and the amount of diesel vehicles miles traveled increased 81%, as shown on Exhibit 2-B. With the implementation of these diesel-related control regulations, ARB expects a DPM decline of 71% for 2000-2020.

EXHIBIT 2-B: DIESEL PARTICULATE MATTER AND DIESEL VEHICLE MILES TREND



Source: California Air Resources Board

DIESEL REGULATIONS

The CARB and the Ports of Los Angeles and Long Beach (POLA and POLB) have adopted several iterations of regulations for diesel trucks that are aimed at reducing diesel particulate matter (DPM). More specifically, the CARB Drayage Truck Regulation (29), the CARB statewide On-road Truck and Bus Regulation (30), and the Ports of Los Angeles and Long Beach “Clean Truck Program” (CTP) require accelerated implementation of “clean trucks” into the statewide truck fleet (31). In other words, older more polluting trucks will be replaced with newer, cleaner trucks as a function of these regulatory requirements.

Moreover, the average statewide DPM emissions for Heavy Duty Trucks (HDT), in terms of grams of DPM generated per mile traveled, will dramatically be reduced due to the aforementioned regulatory requirements.

Diesel emissions identified in this analysis would therefore overstate future DPM emissions since not all the regulatory requirements are reflected in the modeling.

CANCER RISK TRENDS

Based on information available from CARB, overall cancer risk throughout the SCAB has had a declining trend since 1990. In 1998, following an exhaustive 10-year scientific assessment process, CARB identified particulate matter from diesel-fueled engines as a toxic air contaminant. The SCAQMD initiated a comprehensive urban toxic air pollution study, called MATES-II (for Multiple Air Toxics Exposure Study). Diesel particulate matter (DPM) accounts for more than 70 percent of the cancer risk.

In 2008 the SCAQMD prepared an update to the MATES-II study, referred to as MATES-III. MATES-III estimates the average excess cancer risk level from exposure to TACs is an approximately 17% decrease in comparison to the MATES-II study.

In 2015, the SCAQMD published an in-depth analysis of the toxic air contaminants and the resulting health risks for all of Southern California. The *Multiple Air Toxics Exposure Study in the SCAB, MATES IV,"* which shows that cancer risk has decreased less than 50% since MATES III (2005) (32).

MATES-IV study represents the baseline health risk for a cumulative analysis. MATES-IV calculated cancer risks based on monitoring data collected at ten fixed sites within the SCAB. None of the fixed monitoring sites are within the local area of the Project site. However, MATES-IV has extrapolated the excess cancer risk levels throughout the SCAB by modeling the specific grids. MATES-IV modeling predicted an excess cancer risk of 863.99 in one million for the Project area. DPM is included in this cancer risk along with all other TAC sources. DPM accounts for 68% of the total risk shown in MATES-IV. Cumulative Project generated TACs are limited to DPM.

In January 2018, as part of the overall effort to reduce air toxics exposure in the SCAB, SCAQMD began conducting the MATES V Program. MATES V field measurements will be conducted over a one-year period at ten fixed sites (the same sites selected for MATES III and IV) to assess trends in air toxics levels. MATES V will also include measurements of ultrafine particles (UFP) and black carbon (BC) concentrations, which can be compared to the UFP levels measured in MATES IV (33). The final report for the MATES V study is currently expected to be available in Fall 2019, however no definitive date has been provided.

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3 PROJECT AIR QUALITY IMPACT

3.1 INTRODUCTION

The Project has been evaluated to determine if it will 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 will 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. The significance of these potential impacts is described in the following section.

3.2 STANDARDS OF SIGNIFICANCE

The criteria used to determine the significance of potential Project-related air quality impacts are taken from the Initial Study Checklist in Appendix G of the State CEQA Guidelines (14 California Code of Regulations §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to air quality if it would (1):

- Conflict with or obstruct implementation of the applicable air quality plan.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard.
- Expose sensitive receptors to substantial pollutant concentrations.
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. affecting a substantial number of people.

The SCAQMD has also developed regional significance thresholds for other regulated pollutants, as summarized at Table 3-1 (34). The SCAQMD's CEQA Air Quality Significance Thresholds (March 2015) 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 REGIONAL EMISSIONS THRESHOLDS

Pollutant	Construction	Operations
Regional Thresholds		
NO_X	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SO_X	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day

lbs/day – Pounds Per Day
Source: Regional Thresholds presented in this table are based on the SCAQMD Air Quality Significance Thresholds, March 2015

3.3 California Emissions Estimator Model™ Employed to Estimate AQ Emissions

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

On October 17, 2017, the SCAQMD in conjunction with the CAPCOA and other California air districts, released the latest version of the California Emissions Estimator Model™ (CalEEMod™) v2016.3.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$) and GHG emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (35). 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 Appendices 3.1 through 3.3.

3.3.1 Land Uses Modeled in CalEEMod

The Project is located on 1,980,673 sf/45.47 acres. As previously stated, the Project proposes to construct the following uses:

- 560,291 sf of warehousing use (Buildings 1 through 6)
- 520,317 sf of high-cube fulfillment center use (Building 7)

CalEEMod does not provide an extensive selection of land use subtype categories, land uses that most closely fit the Project will be utilized. For purposes of analysis, the following land uses were modeled (36):

- 560.291 thousand square feet (TSF)/12.86 acres of Unrefrigerated Warehouse – No Rail[4]
- 520.317 TSF/11.94 acres of Unrefrigerated Warehouse – Rail[5]
- 67.64 TSF/1.55 acres Other Non-Asphalt Surfaces[6]
- 156.03 TSF/3.58 acres Other Asphalt Surfaces[7]
- 1,691 Space Parking Lot[8] on 15.54 acres

3.3.2 Emission Factors Model

Vehicle emissions were estimated using information generated within the 2017 version of the Emission Factor model (EMFAC) developed by the CARB. EMFAC2017 is a mathematical model that was developed to calculate emission rates, fuel consumption, and VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the

[4] CalEEMod defines Unrefrigerated Warehouse – No Rail uses are warehouse uses that do not have refrigeration and a rail spur.
[5] Unrefrigerated Warehouse – Rail uses are defined as warehouse uses that do not have refrigeration by a rail spur.
[6] The User's Guide defines Other Non-Asphalt Surfaces as non-asphalt areas. As indicated on the site plan, the landscaped area is approximately 10% of the interior parking area. For purposes of analysis, this category is used to model the 67,640 sf/1.55 acre of Landscaped areas.
[7] For purposes of analysis, the remaining 156,030 sf/3.58 acre of Paved/Yard Area (including roadway improvements along Limonite Avenue and Archibald Avenue) will be modeled as Other Asphalt Surfaces. These surfaces are defined as an asphalt area not used as a parking lot.
[8] CalEEMod default of 676,400 sf/15.54 acres will be used to model the 1,691 parking spaces.

CARB to project changes in future emissions from on-road mobile sources (37). This AQIA utilizes summer, winter, and annual EMFAC2017 emission factors in order to derive vehicle emissions associated with Project operational activities, which vary by season.

3.4 CONSTRUCTION EMISSIONS

Construction activities associated with the Project will result in emissions of VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$. Construction related emissions are expected from the following construction activities:

- Demolition
- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating
- Off-Site Utility and Infrastructure Improvements

Dust is typically a major concern during demolition and 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.

Demolition

The Project site is currently developed with six (6) building structures, approximately 23 sheds, and asphalt. It should be noted that information regarding demolition quantities have not been provided and is not readily available online. As such, the total building square footage was estimated to be roughly 38,321.98 sf. In order to account for the existing sheds and asphalt, a 30% contingency (11,496.59 sf) was applied to the total building square footage. As a conservative measure, this analysis assumes that the Project would demolish 49,818.57 sf of building.

Grading Activities

The Project is anticipated to include soil import and export within the Project site boundaries as a part of Project construction. Based on information provided by the Project Applicant, the Project is expected require 94,000 cubic yards of cut and 61,000 cubic yards of fill. For purposes of analysis, 33,000 cubic yards of export will be analyzed along with the CalEEMod default hauling trip length of 20 miles.

Off-Site Utility and Infrastructure Improvements

Construction emissions associated with off-site utility and infrastructure improvements may occur, however at this time, a specific schedule of off-site utility and infrastructure improvements is unknown. However, impacts associated with these expected activities are not expected to exceed the emissions identified for Project-related construction activities. As such, no impacts beyond what has already been identified in this report are expected to occur.

Construction Worker Vehicle Trips

Construction emissions for construction worker vehicles traveling to and from the Project site, as well as vendor trips (construction materials delivered to the Project site) were estimated based on information from CalEEMod model defaults.

3.4.1 CONSTRUCTION DURATION

Construction is expected to commence in January 2020 and will last through December 2021. The construction schedule utilized in the analysis, shown in Table 3-2, represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as time passes and the analysis year increases due to emission regulations becoming more stringent.[9] The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per *CEQA Guidelines*. The duration of construction activity was based on the 2021 opening year, consistent with *The Homestead Traffic Impact Analysis* (Urban Crossroads, Inc.) (TIA) (38).

TABLE 3-2: CONSTRUCTION DURATION

Phase Name	Start Date	End Date	Days
Demolition	01/06/2020	03/13/2020	50
Site Preparation	03/14/2020	04/24/2020	30
Grading	04/25/2020	08/07/2020	75
Building Construction	08/08/2020	12/10/2021	350
Paving	10/02/2021	12/17/2021	55
Architectural Coating	08/01/2021	12/17/2021	100

Source: Construction activity based the 2021 opening year.

In order to meet the 2021 opening year, the CalEEMod default number of days for the building construction phase was reduced to 350 days. Additionally, it is assumed that paving and architectural coating activities would be conducted concurrent with the building construction.

[9] As shown in the California Emissions Estimator Model (CalEEMod) User's Guide Version 2016.3.2, Section 4.3 "OFFROAD Equipment" as the analysis year increases, emission factors for the same equipment pieces decrease due to the natural turnover of older equipment being replaced by newer less polluting equipment and new regulatory requirements.

3.4.2 CONSTRUCTION EQUIPMENT

Site specific construction fleet may vary due to specific project needs at the time of construction. The associated construction equipment was generally based on CalEEMod 2016.3.2 defaults. A detailed summary of construction equipment assumptions by phase is provided at Table 3-3.

TABLE 3-3: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Activity	Equipment	Number	Hours Per Day
Demolition	Concrete/Industrial Saws	1	8
	Excavators	3	8
	Rubber Tired Dozers	2	8
Site Preparation	Rubber Tired Dozers	3	8
	Tractors/Loaders/Backhoes	4	8
Grading	Excavators	2	8
	Graders	1	8
	Rubber Tired Dozers	1	8
	Scrapers	2	8
	Tractors/Loaders/Backhoes	2	8
Building Construction	Cranes	1	8
	Forklifts	3	8
	Generator Sets	1	8
	Tractors/Loaders/Backhoes	3	8
	Welders	1	8
Paving	Pavers	2	8
	Paving Equipment	2	8
	Rollers	2	8
Architectural Coating	Air Compressors	1	8

Source: Construction equipment based on CalEEMod defaults.

3.4.2 CONSTRUCTION EMISSIONS SUMMARY

Impacts without Mitigation

CalEEMod calculates maximum daily emissions for summer and winter periods. The estimated maximum daily construction emissions without mitigation are summarized on Table 3-4. CalEEMod calculates maximum daily emissions for summer and winter periods. Detailed construction model outputs are presented in Appendix 3.1. Under the assumed scenarios, emissions resulting from the Project construction will not exceed criteria pollutant thresholds established by the SCAQMD for emissions of any criteria pollutant.

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

Phase	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer						
2020	7.39	63.28	57.63	0.21	12.82	6.02
2021	61.38	66.52	77.57	0.25	15.36	5.43
Winter						
2020	7.36	63.40	52.27	0.19	12.82	6.02
2021	61.34	66.35	71.33	0.23	15.36	5.43
Maximum Daily Emissions	**61.38**	**66.52**	**77.57**	**0.25**	**15.36**	**6.02**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**YES**	**YES**	**NO**	**NO**	**NO**	**NO**

Source: CalEEMod regional construction-source emissions are presented in Appendix 3.1.

3.5 OPERATIONAL EMISSIONS

Operational activities associated with the proposed Project will result in emissions of VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$. Operational emissions would be expected from the following primary sources:

- Area Source Emissions
- Energy Source Emissions
- Mobile Source Emissions

3.5.1 AREA SOURCE EMISSIONS

Architectural Coatings

Over a period of time, the buildings that are part of this Project will 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 using the CalEEMod.

Consumer Products

Consumer products 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 defaults provided within the CalEEMod model.

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 assumptions provided in the CalEEMod model.

3.5.2 ENERGY SOURCE EMISSIONS

Combustion Emissions Associated with Natural Gas and Electricity

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 using CalEEMod.

Title 24 Energy Efficiency Standards

California's Energy Efficiency Standards for Residential and Nonresidential Buildings was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity. The 2019 version of Title 24 was adopted by the CEC and will become effective on January 1, 2020. As such, the analysis herein assumes compliance with the 2019 Title 24 Standards.

3.5.3 MOBILE SOURCE EMISSIONS

Vehicles

Project-related operational air quality emissions derive predominantly from mobile sources. In this regard, approximately 85 percent (by weight) of all Project operational-source emissions would be generated by mobile sources (vehicles). More specifically, 91 percent of the Project's NO_X emissions are derived from heavy duty truck trips. Neither the Project Applicant nor the City have any regulatory control over these tail pipe emissions. Rather, vehicle tail pipe source emissions are regulated by CARB and EPA. As summarized previously herein, as the result of CARB and EPA actions, basin-wide vehicular-source emissions have been reduced dramatically over the past years and are expected to further decline as clean vehicle and fuel technologies improve.

The Project related operational air quality emissions derive primarily from vehicle trips generated by the Project. Trip characteristics available from the TIA report were utilized in this analysis. Per TIA prepared by Urban Crossroads, Inc. the Project is expected to generate a total of approximately 2,102 two-way trips per day (actual vehicles) (38). The Project trip generation includes 408 two-way truck trips per day. The passenger car and truck fleet for the proposed industrial uses are broken down by passenger car and truck type (or axle type).

3.5.3.1 Trip Length

Trip lengths for passenger cars and trucks were determined based on the regional traffic model. The Riverside County Traffic Analysis Model (RivTAM) was used to estimate trip lengths for the Project's passenger cars and trucks.

More specifically, RivTAM was utilized to conduct select zone model runs for the proposed Project. RivTAM was prepared for the Riverside County Transportation Department as a sub-regional model based on SCAG model, which includes the entire SCAG region.

Based on RivTAM, the average trip length for trucks was calculated to be 36.2 miles. The trip length for automobiles (passenger cars, small trucks, motorcycles, etc.) was calculated to be 14.4 miles (39).

The use of a travel demand model is supported by substantial evidence since the information contained in the model is specific to the region and for the land use type being proposed. Furthermore, the use of travel demand models is also a recommended practice that is being promoted by the Governor's Office of Planning and Research (OPR) in their updated CEQA guidelines with respect to Senate Bill (SB) 743. Specifically, the latest technical advisory documentation published by OPR (December 2018 see Page 30-31) (40) explicitly states that:

> *…agencies can use travel demand models or survey data to estimate existing trip lengths and input those into sketch models such as CalEEMod to achieve more accurate results. Whenever possible, agencies should input localized trip lengths into a sketch model to tailor the analysis to the project location.*

The procedure described by OPR in their SB 743 technical advisory is precisely the method that has been used to calculate trip lengths and consequently VMT for the Project.

3.5.3.2 Approach for Analysis of the Project

Two Separate model runs were utilized for each phase in order to more accurately model emissions resulting from passenger car and truck operations.

<u>Passenger Cars</u>

The first run analyzed passenger car emissions, incorporated the RivTAM calculated trip length of 14.4 miles for passenger cars and an assumption of 100% primary trips. It is important to note that although the TIA does not breakdown passenger cars by type, this analysis assumes that passenger cars include Light-Duty-Auto vehicles (LDA), Light-Duty-Trucks (LDT1[10] & LDT2[11]), and Medium-Duty-Vehicles (MDV) vehicle types. In order to account for emissions generated by passenger cars, the following fleet mix was utilized in this analysis:

[10] Vehicles under the LDT1 category have a gross vehicle weight rating (GVWR) of less than 6,000 lbs. and equivalent test weight (ETW) of less than or equal to 3,750 lbs.

[11] Vehicles under the LDT2 category have a GVWR of less than 6,000 lbs. and ETW between 3,751 lbs. and 5,750 lbs.

TABLE 3-5: PASSENGER CAR FLEET MIX

Phase Name	Vehicle Type	%
Warehouse	LDA	61.40
	LDT1	4.30
	LDT2	21.00
	MDV	13.30
High-Cube Fulfillment Center Warehouse	LDA	61.40
	LDT1	4.30
	LDT2	21.00
	MDV	13.30

Note: The Project-specific passenger car fleet mix used in this analysis is based on a proportional split utilizing the default CalEEMod percentages assigned to LDA, LDT1, LDT2, and MDV vehicles types.

Trucks

The second run analyzed truck emissions, incorporated the RivTAM calculated trip length of 36.2 miles for trucks and an assumption of 100% primary trips. The truck fleet mix is estimated by rationing the trip rates for each truck type based on information provided in the TIA. Heavy trucks are broken down by truck type (or axle type) and are categorized as either Light-Heavy-Duty Trucks (LHDT)/2-axle, Medium-Heavy-Duty Trucks (MHDT)/3-axle, and Heavy-Heavy-Duty Trucks (HHDT)/4+-axle. In order to account for emissions generated by trucks, the following fleet mix was utilized in this analysis:

TABLE 3-6: TRUCK FLEET MIX

Phase Name	Vehicle Type	%
Warehouse	LHDT	10.70
	MHDT	10.70
	HHDT	78.60
High-Cube Fulfillment Center Warehouse	LHDT	16.70
	MHDT	20.70
	HHDT	62.60

Note: Project-specific truck fleet mix is based on the number of trips generated by each truck type (LHDT, MHDT, and HHDT) relative to the total number of truck trips.

It should be noted that the TIA identifies two different truck categories for the high-cube fulfillment center warehouse use, 2-4-axle and 5+-axle trucks. CalEEMod categorizes trucks by truck type, not by axle-type. In order to account for emissions from LHDT, MHDT, and HHDT trucks, the analysis herein assumed that 25 percent of the 2-4 axle trucks are LHDT, 25 percent are MHDT, and the remaining 50 percent are HHDT.

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 break and tire wear particulates. The emissions estimates for travel on paved roads were calculated using the CalEEMod model (41).

3.5.4 ON-SITE EQUIPMENT EMISSIONS

It is common for industrial buildings to require cargo handling equipment to move empty containers and empty chassis to and from the various pieces of cargo handling equipment that receive and distribute containers. The most common type of cargo handling equipment is the yard truck which is designed for moving cargo containers. Yard trucks are also known as yard goats, utility tractors (UTRs), hustlers, yard hostlers, and yard tractors. The cargo handling equipment is assumed to have a horsepower (hp) range of approximately 175 hp to 200 hp. Based on the latest available information from SCAQMD (42); for example, high-cube warehouse projects typically have 3.6 yard trucks per million square feet of building space. For this particular Project, based on the maximum square footage of manufacturing use permitted by the proposed Project, on-site modeled operational equipment includes four (4) 200 hp, compressed natural gas-powered yard tractors operating at 4 hours a day for 365 days of the year.

3.5.5 OPERATIONAL EMISSIONS SUMMARY

Impacts without Mitigation

As previously stated, CalEEMod utilizes summer and winter EMFAC2017 emission factors in order to derive vehicle emissions associated with Project operational activities, which vary by season. As such, operational activities for summer and winter scenarios are presented in Table 3-7. Detailed operation model outputs are presented in Appendices 3.2 through 3.3. As shown on Table 3-7, Project operational-source emissions would exceed the SCAQMD regional thresholds of significance for emissions of NO_X. It is important to note that 47 percent of the Project's NO_X emissions are derived from heavy duty truck trips. Since the Project does not have regulatory authority to control tailpipe emissions, no feasible mitigation measures exist that would reduce NO_X emissions to levels that are less-than-significant, thus these emissions are considered significant and unavoidable.

TABLE 3-7: SUMMARY OF OPERATIONAL EMISSIONS

Operational Activities – Summer Scenario	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Area Source	24.56	2.82e-03	0.31	2.00e-05	1.10e-03	1.10e-03
Energy Source	0.05	0.42	0.35	2.49e-03	0.03	0.03
Mobile Source (Passenger Cars)	4.78	3.71	63.03	0.18	18.57	4.98
Mobile Source (Trucks)	2.82	100.01	18.82	0.36	14.31	5.12
On-Site Equipment	0.55	6.18	0.10	0.01	0.21	0.19
Total Maximum Daily Emissions	**32.75**	**110.32**	**82.60**	**0.55**	**33.12**	**10.33**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**YES**	**NO**	**NO**	**NO**	**NO**
Operational Activities – Winter Scenario	**Emissions (lbs/day)**					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Area Source	24.56	2.82e-03	0.31	2.00e-05	1.10e-03	1.10e-03
Energy Source	0.05	0.42	0.35	2.49e-03	0.03	0.03
Mobile Source (Passenger Cars)	4.24	3.84	51.41	0.16	18.57	4.98
Mobile Source (Trucks)	2.76	104.39	18.09	0.36	14.30	5.12
On-Site Equipment	0.55	6.18	0.10	0.01	0.21	0.19
Total Maximum Daily Emissions	**32.16**	**114.84**	**70.25**	**0.54**	**33.11**	**10.33**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**YES**	**NO**	**NO**	**NO**	**NO**

Source: CalEEMod regional operational-source emissions are presented in Appendices 3.2 and 3.3.

3.6 LOCALIZED SIGNIFICANCE - CONSTRUCTION ACTIVITY

BACKGROUND ON LOCALIZED SIGNIFICANCE THRESHOLD (LST) DEVELOPMENT

The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (LST Methodology) (43). 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 any 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[12]. 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.

LSTs were developed in response to environmental justice and health concerns raised by the public regarding exposure of individuals to criteria pollutants in local communities. To address the issue of localized significance, the SCAQMD adopted LSTs that show whether a project would cause or contribute to localized air quality impacts and thereby cause or contribute to potential localized adverse health effects. The analysis makes use of methodology included in the *LST Methodology* (44).

APPLICABILITY OF LSTS FOR THE PROJECT

For this Project, the appropriate Source Receptor Area (SRA) for the LST analysis is the SCAQMD Corona/Norco Area monitoring station (SRA 22). LSTs apply to CO, NO_2, PM_{10}, and $PM_{2.5}$. The SCAQMD produced look-up tables for projects less than or equal to 5 acres in size.

In order to determine the appropriate methodology for determining localized impacts that could occur as a result of Project-related construction, the following process is undertaken:

- CalEEMod is utilized to determine the maximum daily on-site emissions that will occur during construction activity.
- The SCAQMD's Fact Sheet for Applying CalEEMod to Localized Significance Thresholds (45) is used to determine the maximum site acreage that is actively disturbed based on the construction equipment fleet and equipment hours as estimated in CalEEMod.
- If the total acreage disturbed is less than or equal to five acres per day, then the SCAQMD's screening look-up tables are utilized to determine if a project has the potential to result in a significant impact. The look-up tables establish a maximum daily emissions threshold in pounds per day that can be compared to CalEEMod outputs.
- If the total acreage disturbed is greater than five acres per day, then LST impacts are appropriately evaluated through dispersion modeling.

EMISSIONS CONSIDERED

SCAQMD's *LST Methodology* clearly states that "off-site mobile emissions from the Project should not be included in the emissions compared to LSTs (43)." Therefore, for purposes of the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered.

[12] The purpose of SCAQMD's Environmental Justice program is to ensure that everyone has the right to equal protection from air pollution and fair access to the decision-making process that works to improve the quality of air within their communities. Further, the SCAQMD defines Environmental Justice as "…equitable environmental policymaking and enforcement to protect the health of all residents, regardless of age, culture, ethnicity, gender, race, socioeconomic status, or geographic location, from the health effects of air pollution."

MAXIMUM DAILY DISTURBED-ACREAGE

Table 3-8 is used to determine the maximum daily disturbed acreage for use in determining the applicability of the SCAQMD's LST look-up tables. Based on Table 3-6, the proposed Project could actively disturb approximately 1.0 acre per day during demolition activities, 1.5 acres per day during site preparation activities, and 3.0 acres per day during grading activities. The acres disturbed is based on the equipment list and days in for demolition, site preparation, and grading according to the anticipated maximum number of acres a given piece of equipment can pass over in an 8-hour workday (as shown on Table 3-8). The equipment-specific grading rates are summarized in the CalEEMod user's guide, *Appendix A: Calculation Details for CalEEMod* (October 2017). For purposes of analysis, the Project's site preparation and grading activities are modeled after SCAQMD's Summary of Five Acre Site. As such, the maximum daily disturbed acreage of five acres is used in determining the applicability of the SCAQMD's LST look-up tables. This methodology is consistent with recent recommendations made by SCAQMD planning staff.

TABLE 3-8: MAXIMUM DAILY DISTURBED-ACREAGE

Construction Phase	Equipment Type	Equipment Quantity	Acres graded per 8-hour day	Operating Hours per Day	Acres graded per day
Demolition	Rubber Tired Dozers	2	0.5	8	1.0
Total acres disturbed per day during Demolition					1.0
Site Preparation	Rubber Tired Dozers	3	0.5	8	1.5
Total acres disturbed per day during Site Preparation					1.5
Grading	Graders	1	0.5	8	0.5
	Rubber Tired Dozers	1	0.5	8	0.5
	Scrapers	2	1.0	8	2.0
Total acres disturbed per day during Grading					3.0

Source: Maximum daily disturbed acreage based on equipment list presented in Appendix 3.1.

SENSITIVE RECEPTORS

As previously stated, 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. Receptor locations are off-site locations where individuals may be exposed to emissions from Project activities. This AQIA analyzes localized construction and operational emissions impacts at the nearest sensitive receptors.

<u>Residential Receptors</u>

Some people are especially sensitive to air pollution and are given special consideration when evaluating air quality impacts from projects. These groups of people include children, the elderly, individuals with pre-existing respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. Structures that house these persons or places where they gather to exercise are defined as "sensitive receptors"; they are also known to be locations where an individual can remain for 24 hours.

Non-Residential Receptors

As per the *LST Methodology*, commercial and industrial facilities are not included in the definition of sensitive receptor because employees do not typically remain onsite for a full 24 hours but are typically onsite for eight hours. However, it should be noted that the *LST Methodology* explicitly states that "*LSTs based on shorter averaging periods, such as the NO_2 and CO LSTs, could also be applied to receptors such as industrial or commercial facilities since it is reasonable to assume that a worker at these sites could be present for periods of one to eight hours* (43)." Consistent with the SCAQMD's Final LST Methodology, the nearest industrial or commercial use to the Project site will be used to determine operational and construction air impacts for emissions of NO_2 and CO.

Project-related Sensitive Receptors

Sensitive receptors in the Project study area include existing residential homes and industrial uses. The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Project's potential to cause an individual and cumulatively significant impact. As such, the nearest residential receptor to the Project site is located approximately 285 feet/87 meters northeast Project site on Remington Avenue. Alternatively, the nearest non-residential receptor is an industrial building located 10 feet/3 meters south of the Project site on Archibald Avenue. For purposes of analysis, an 87-meter receptor distance is utilized as a screening threshold to determine LSTs for emissions of PM_{10} and $PM_{2.5}$. It should be noted that although the nearest non-sensitive receptor is 3-meters from the Project site, the *LST Methodology* explicitly states that "*It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters* (43)." As such a 25-meter receptor distance will be used for NO_2 and CO.

LOCALIZED THRESHOLDS FOR CONSTRUCTION ACTIVITY

Since the total acreage disturbed is less than five acres per day for demolition, site preparation, and the grading phases, the SCAQMD's screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized, consistent with SCAQMD guidance, in order to interpolate the threshold values for the other disturbed acreage and distances not identified in the look-up tables.

TABLE 3-9: MAXIMUM DAILY LOCALIZED EMISSIONS THRESHOLDS

Pollutant	Construction	Operations
Localized Thresholds		
NO_X	118 lbs/day (Demolition)	270 lbs/day
	144 lbs/day (Site Preparation)	
	203 lbs/day (Grading)	
CO	674 lbs/day (Demolition)	1,700 lbs/day
	841 lbs/day (Site Preparation)	
	1,238 lbs/day (Grading)	
PM_{10}	27 lbs/day (Demolition)	13 lbs/day
	30 lbs/day (Site Preparation)	
	40 lbs/day (Grading)	
$PM_{2.5}$	8 lbs/day (Demolition)	4 lbs/day
	9 lbs/day (Site Preparation)	
	13 lbs/day (Grading)	

Source: Localized Thresholds presented in this table are based on the SCAQMD Final Localized Significance Threshold Methodology, July 2008

CONSTRUCTION-SOURCE EMISSIONS LST ANALYSIS

Impacts without Mitigation

Table 3-10 identifies the localized impacts at the nearest receptor location in the vicinity of the Project. Outputs from the model runs for construction LSTs are provided in Appendix 3.1. As shown, Project construction-source emissions would not exceed the numerical thresholds of significance established by the SCAQMD for any criteria pollutant. Thus, a less than significant impact would occur for Project-related construction-source emissions and no mitigation is required.

TABLE 3-10: LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION (WITHOUT MITIGATION, 1 OF 2)

On-Site Demolition Emissions	Emissions (lbs/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**33.20**	**21.75**	**2.04**	**1.60**
SCAQMD Localized Threshold	118	674	27	8
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

TABLE 3-10: LOCALIZED SIGNIFICANCE SUMMARY OF CONSTRUCTION (WITHOUT MITIGATION, 2 OF 2)

On-Site Site Preparation Emissions	Emissions (lbs/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**42.42**	**21.51**	**9.86**	**5.96**
SCAQMD Localized Threshold	144	841	30	9
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**
On-Site Grading Emissions	**Emissions (lbs/day)**			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**50.20**	**31.96**	**5.79**	**3.43**
SCAQMD Localized Threshold	203	1,238	40	13
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

Source: CalEEMod localized construction-source emissions are presented in Appendix 3.1.

3.7 LOCALIZED SIGNIFICANCE – LONG-TERM OPERATIONAL ACTIVITY

The Project is located on a 45.47-acre parcel. As noted previously, the LST Methodology provides look-up tables for sites with an area with daily disturbance of 5 acres or less. For projects that exceed 5 acres, the 5-acre LST look-up tables can be used as a screening tool to determine which pollutants require additional detailed analysis. This approach is conservative as it assumes that all on-site emissions associated with the project would occur within a concentrated 5-acre area. This screening method would therefore over-predict potential localized impacts, because by assuming that on-site operational activities are occurring over a smaller area, the resulting concentrations of air pollutants are more highly concentrated once they reach the smaller site boundary than they would be for activities if they were spread out over a larger surface area. On a larger site, the same amount of air pollutants generated would disperse over a larger surface area and would result in a lower concentration once emissions reach the project-site boundary. As such, LSTs for a 5-acre site during operations are used as a screening tool to determine if further detailed analysis is required.

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 3-11 represent all on-site Project-related stationary (area) sources. Considering that the trip length used in CalEEMod™ for the Project is approximately 36.2 miles for trucks and 14.4 miles for passenger cars, 5% of this total would represent an on-site travel distance of approximately 1.81 miles/9,557 feet for trucks and 0.72 miles/3,802 feet for passenger cars. 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. Modeling based on these assumptions demonstrates that even within broad encompassing parameters, Project operational-source emissions would not exceed applicable LSTs.

OPERATIONAL-SOURCE EMISSIONS LST ANALYSIS

Impacts without Mitigation

As shown on Table 3-11 operational emissions will not exceed the LST thresholds for the nearest sensitive receptor. As shown, Project operational-source emissions would not exceed the numerical thresholds of significance established by the SCAQMD for any criteria pollutant. Thus, a less than significant impact would occur for Project-related operational-source emissions and no mitigation is required.

TABLE 3-11: LOCALIZED SIGNIFICANCE SUMMARY OF OPERATIONS

Operational Activity	Emissions (lbs/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	**12.01**	**4.84**	**1.89**	**0.73**
SCAQMD Localized Threshold	270	1,700	13	4
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

Source: CalEEMod localized operational-source emissions are presented in Appendices 3.2 and 3.3.

3.8 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 CO "hot spots" is not needed to reach this conclusion.

An adverse CO concentration, known as a "hot spot", 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 CAAQS and NAAQS for CO (46).

It has long been recognized that CO hotspots 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 concentration in the SCAB is now designated as attainment, as previously noted in Table 2-3. Also, CO concentrations in the Project vicinity have steadily declined, as indicated by historical emissions data presented previously at Table 2-4.

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, as shown on Table 3-12.

TABLE 3-12: CO MODEL RESULTS

Intersection Location	CO Concentrations (ppm)		
	Morning 1-hour	Afternoon 1-hour	8-hour
Wilshire Blvd./Veteran Ave.	4.6	3.5	3.7
Sunset Blvd./Highland Ave.	4	4.5	3.5
La Cienega Blvd./Century Blvd.	3.7	3.1	5.2
Long Beach Blvd./Imperial Hwy.	3	3.1	8.4

Source: 2003 AQMP, Appendix V: Modeling and Attainment Demonstrations
Notes: Federal 1-hour standard is 35 ppm and the deferral 8-hour standard is 9.0 ppm.

Based on the 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 traffic volumes and congestion at a particular intersection. As evidence of this, for example, 8.4 ppm CO concentration measured at the Long Beach Blvd. and Imperial Hwy. intersection (highest CO generating intersection within the "hot spot" analysis), only 0.7 ppm was attributable to the traffic volumes and congestion at this intersection; the remaining 7.7 ppm were due to the ambient air measurements at the time the 2003 AQMP was prepared (46). Therefore, even if the traffic volumes for the proposed Project were double or even triple of the traffic volumes generated at the Long Beach Blvd. and Imperial Hwy. intersection, coupled with the on-going improvements in ambient air quality, the Project would not be capable of resulting in a CO "hot spot" at any study area intersections.

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 (vph) —or 24,000 vph where vertical and/or horizontal air does not mix—in order to generate a significant CO impact (47).

Traffic volumes generating the CO concentrations for the "hot spot" analysis is shown on Tables 3-13. The busiest intersection evaluated was that at Wilshire Blvd. and Veteran Ave., which has a daily traffic volume of approximately 100,000 vehicles per day and AM/PM traffic volumes of 8,062 vph and 7,719 vph respectively (46). The 2003 AQMP estimated that the 1-hour concentration for this intersection was 4.6 ppm; this indicates that, should the daily traffic volume increase four times to 400,000 vehicles per day, CO concentrations (4.6 ppm x 4= 18.4 ppm) would still not likely exceed the most stringent 1-hour CO standard (20.0 ppm).[13] Based on information provided in the TIA, the highest average daily trips on a segment of road would be 32,800 daily trips on Interstate 15 (I-15) southbound ramps and Limonite Avenue, which is lower

13 Based on the ratio of the CO standard (20.0 ppm) and the modeled value (4.6 ppm).

than the highest daily traffic volumes at Wilshire Blvd. and Veteran Ave. of 100,000 vehicles per day (38). Additionally, the 2003 AQMP determined that the highest traffic volumes on a segment of road is 8,674 vph on La Cienega Boulevard and Century Boulevard. The highest trips on a segment of road for the Project is 4,345 vph on Hamner Avenue and Limonite Avenue. As such, Project-related traffic volumes are less than the traffic volumes identified in the 2003 AQMP.

TABLE 3-13: TRAFFIC VOLUMES

Intersection Location	Peak Traffic Volumes (vph)				
	Eastbound (AM/PM)	Westbound (AM/PM)	Southbound (AM/PM)	Northbound (AM/PM)	Total (AM/PM)
Wilshire Blvd./Veteran Ave.	4,954/2,069	1,830/3,317	721/1,400	560/933	8,062/7,719
Sunset Blvd./Highland Ave.	1,417/1,764	1,342/1,540	2,304/1,832	1,551/2,238	6,614/5,374
La Cienega Blvd./Century Blvd.	2,540/2,243	1,890/2,728	1,384/2,029	821/1,674	6,634/8,674
Long Beach Blvd./Imperial Hwy.	1,217/2,020	1,760/1,400	479/944	756/1,150	4,212/5,514

Source: 2003 AQMP

TABLE 3-14: PROJECT PEAK TRAFFIC VOLUMES

Intersection Location	Peak Traffic Volumes (vph)				
	Northbound (AM/PM)	Southbound (AM/PM)	Eastbound (AM/PM)	Westbound (AM/PM)	Total (AM/PM)
Archibald Av./Ontario Ranch Rd.	1,546/860	601/1,182	263/790	986/584	3,396/3,416
Archibald Av./Limonite Av.	1,228/907	747/1,481	48/171	950/653	2,973/3,212
Sumner Av./Limonite Av.	702/414	495/829	725/970	752/841	2,675/3,054
Hamner Av./Limonite Av.	1,022/982	618/1,144	774/1,094	776/1,125	3,191/4,345

Source: *The Homestead Traffic Impact Analysis* (Urban Crossroads, Inc., 2019)

The proposed Project considered herein would not produce the volume of traffic required to generate a CO "hot spot" either in the context of the 2003 Los Angeles hot spot study, or based on representative BAAQMD CO threshold considerations, as shown on Table 3-14. Therefore, CO "hot spots" 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.

3.9 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 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 SCAB. In response, the SCAQMD has adopted a series of 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.

In March 2017, the AQMD released the Final 2016 AQMP. The 2016 AQMP continues to evaluate current integrated strategies and control measures to meet the NAAQS, as well as, explore new and innovative methods to reach its goals. Some of these approaches include utilizing incentive programs, recognizing existing co-benefit programs from other sectors, and developing a strategy with fair-share reductions at the federal, state, and local levels (48). Similar to the 2012 AQMP, the 2016 AQMP incorporates scientific and technological information and planning assumptions, including the 2016 RTP/SCS, a planning document that supports the integration of land use and transportation to help the region meet the federal Clean Air Act requirements (19). The Project's consistency with the AQMP will be determined using the 2016 AQMP as discussed below.

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) (49). 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.

The violations that Consistency Criterion No. 1 refers to are the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if regional or localized significance thresholds were exceeded.

<u>Construction Impacts – Consistency Criterion 1</u>

Consistency Criterion No. 1 refers to violations of the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if LSTs or regional significance thresholds were exceeded. As evaluated, the Project's regional and localized construction-source emissions would not exceed applicable regional significance threshold and LST thresholds. As such, a less than significant impact is expected.

<u>Operational Impacts – Consistency Criterion 1</u>

The Project would not exceed the applicable localized thresholds for operational activity. However, the Project would exceed the applicable regional thresholds for emissions of NO_X.

On the basis of the preceding discussion, the Project would have the potential to conflict with the AQMP according to this criterion.

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

The 2016 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 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 City of Eastvale General Plan is considered to be consistent with the AQMP.

Construction Impacts

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

The City of Eastvale designates the Project site as Light Industrial. The Light Industrial designation allows for a wide variety of industrial and related uses, including assembly and light manufacturing, repair and other service facilities, warehousing, distribution centers, and supporting retail uses (50). As previously stated, the proposed Project is to consist of 560,291 sf warehousing use and 520,317 sf high-cube fulfillment center use, which is consistent with the site's land use designation and intensity.

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

AQMP Consistency Conclusion

The Project would have the potential to result in or cause NAAQS or CAAQS violations. The Project operational-source emissions would exceed the regional significance thresholds for emissions of NO_X. Since no feasible mitigation measures exist that would reduce NO_X emissions to levels that are less-than-significant, these emissions are considered significant and unavoidable. As such, the Project has the potential to conflict with the AQMP.

3.10 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, childcare centers, and athletic facilities can also be considered as sensitive receptors.

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 3.8. Thus, a less than significant impact to sensitive receptors during operational activity is expected.

TOXIC AIR POLLUTANTS FROM PROJECT CONSTRUCTION ACTIVITIES

During short-term construction activity, the Project will also result in some diesel particulate matter (DPM) which is a listed carcinogen and toxic air contaminant (TAC) in the State of California. The 2015 Office of Environmental Health Hazard Assessment (OEHHA) revised risk assessment guidelines suggest that construction projects as short as 2-6 months may warrant evaluation. Notwithstanding, based on Urban Crossroad's professional opinion and experience in preparing health risk assessments for development projects, given the size of the Project and the relatively small amount of equipment and relative short duration of activity, any DPM generated from construction activity would be negligible and not result in any significant health risks. More detailed information is provided in *The Homestead Health Risk Assessment* (Urban Crossroads, Inc., 2019) (51).

Furthermore, the SCAQMD has acknowledged that they are currently evaluating the applicability of age sensitivity factors and have not established CEQA guidance. More specifically in their response to comments received on SCAQMD Rules 1401 in June 2015 (see Board Meeting June 5, 2015), the SCAQMD explicitly states that (Page A-7 and A-8):

> *The Proposed Amended Rules are separate from the CEQA significance thresholds. The SCAQMD staff is currently evaluating how to implement the Revised OEHHA Guidelines under CEQA. The SCAQMD staff will evaluate a variety of options on how to evaluate health risks under the Revised OEHHA Guidelines under CEQA. The SCAQMD staff will conduct public workshops to gather input before bringing recommendations to the Governing Board. In the interim, staff will continue to use the previous guidelines for CEQA determinations.*

3.11 ODORS

The potential for the Project to generate objectionable odors has also been considered. Land uses generally associated with odor complaints include:

- Agricultural uses (livestock and farming)
- Wastewater treatment plants
- Food processing plants
- Chemical plants
- Composting operations
- Refineries
- Landfills
- Dairies
- Fiberglass molding facilities

The Project does not contain land uses typically associated with emitting objectionable odors. Potential odor sources associated with the proposed Project may result from construction equipment exhaust and the application of asphalt and architectural coatings during construction activities and the temporary storage of typical solid waste (refuse) associated with the proposed Project's (long-term operational) uses. Standard construction requirements would minimize odor impacts from construction. The construction odor emissions would be temporary, short-term, and intermittent in nature and would cease upon completion of the respective phase of construction and is thus considered less than significant. It is expected that Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with the City's solid waste regulations. The proposed Project would also be required to comply with SCAQMD Rule 402 to prevent occurrences of public nuisances. Therefore, odors associated with the proposed Project construction and operations would be less than significant and no mitigation is required (52).

3.12 CUMULATIVE IMPACTS

The Project area is designated as an extreme non-attainment area for ozone, and a non-attainment area for PM_{10}, $PM_{2.5}$, and lead.

The AQMD has published a report on how to address cumulative impacts from air pollution: *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution* (53). In this report the AQMD clearly states (Page D-3):

> *…the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for toxic air contaminant (TAC) emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.*
>
> *Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant.*

Therefore, this analysis assumes that individual projects that do not generate operational or construction emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also not cause a cumulatively considerable increase in emissions for those pollutants for which the Basin is in nonattainment, and, therefore, would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related construction and operational emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable.

Construction Impacts

The Project-specific evaluation of emissions presented in the preceding analysis demonstrates that Project construction-source air pollutant emissions would not result in exceedances of regional thresholds. Therefore, Project construction-source emissions would be considered less than significant on a project-specific and cumulative basis.

Operational Impacts

The Project-specific evaluation of emissions presented in the preceding analysis demonstrates that Project operational-source air pollutant emissions has the potential to result in exceedances of regional thresholds. Therefore, Project operational-source emissions are considered cumulatively significant and unavoidable.

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4 REFERENCES

1. **State of California.** *2019 CEQA California Environmental Quality Act.* 2019.
2. **South Coast Air Quality Management District.** RULE 403. FUGITIVE DUST. [Online] https://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-403.pdf?sfvrsn=4.
3. —. RULE 1113. Architectural Coatings. [Online] http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/r1113.pdf.
4. —. Southern California Air Basins. [Online] https://www.arb.ca.gov/msprog/onroad/porttruck/maps/scabc7map.pdf.
5. —. *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning.* 2005.
6. **California Air Resources Board.** Ambient Air Quality Standards (AAQS). [Online] 2016. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.
7. **United State Environmental Protection Agency.** Frequent Questions about General Conformity . *EPA.* [Online] https://www.epa.gov/general-conformity/frequent-questions-about-general-conformity#8.
8. **South Coast Air Quality Management District.** Annual Air Quality Monitoring Network Plan. [Online] July 2018. http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-monitoring-network-plan/annual-air-quality-monitoring-network-plan-v2.pdf?sfvrsn=2.
9. **Air Resources Board.** State and National Ambient Air Quality Standards. [Online] https://www.arb.ca.gov/regact/2019/stateareadesignations/appc.pdf?_ga=2.169398369.1537615702.1554741141-1192937971.1505156621.
10. **South Coast Air Quality Management District.** Map of Monitoring Areas. [Online] http://www.aqmd.gov/docs/default-source/default-document-library/map-of-monitoring-areas.pdf.
11. **District, South Coast Air Quality Management.** Air Quality Data Tables. [Online] https://www.aqmd.gov/home/air-quality/air-quality-data-studies/historical-data-by-year.
12. **Environmental Protection Agency.** National Ambient Air Quality Standards (NAAQS). [Online] 1990. https://www.epa.gov/environmental-topics/air-topics.
13. —. Air Pollution and the Clean Air Act. [Online] http://www.epa.gov/air/caa/.
14. **United States Environmental Protection Agency.** 1990 Clean Air Act Amendment Summary: Title I. [Online] https://www.epa.gov/clean-air-act-overview/1990-clean-air-act-amendment-summary-title-i.
15. —. 1990 Clean Air Act Amendment Summary: Title II. [Online] https://www.epa.gov/clean-air-act-overview/1990-clean-air-act-amendment-summary-title-ii.
16. **Air Resources Board.** California Ambient Air Quality Standards (CAAQS). [Online] 2009. [Cited: April 16, 2018.] http://www.arb.ca.gov/research/aaqs/caaqs/caaqs.htm.
17. **The California Energy Commission.** 2019 Building Energy Efficiency Standards . *California Energy Commission.* [Online] 2018. https://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf.
18. **Department of General Services.** Building Standards Commission. *CALGreen.* [Online] https://codes.iccsafe.org/content/chapter/15778/.

19. **Southern California Association of Governments.** 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy. [Online] April 2016. http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS.pdf.

20. **South Coast Air Quality Management District.** *Air Quality Management Plan.* 2012.

21. **California Air Resources Board.** *The California Almanac of Emissions and Air Quality.* 2013.

22. **South Coast AQMD.** South Coast Air Basin Ozone Trend. [Online] http://www.aqmd.gov/docs/default-source/air-quality/south-coast-air-basin-smog-trend-ozone-chart.pdf.

23. **California Air Resources Board.** iADAM: Air Quality Data Statistics. *California Air Resources Board.* [Online]

24. **South Coast Air Quality Management District.** Final 2016 Air Quality Management Plan. *South Coast Air Quality Management District.* [Online] March 2017. http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf.

25. **South coast Air Quality Management District.** *CEQA Air Quality Handbook (1993).* 1993.

26. **California Environmental Protection Agency Air Resources Board.** Nitrogen Dioxide- Overview. [Online] http://www.arb.ca.gov/research/aaqs/caaqs/no2-1/no2-1.htm.

27. **American Lung Association.** State of the Air Southern California Regional Summary. [Online] http://www.lung.org/local-content/california/documents/state-of-the-air/2017/sota-2017_southernca-fact.pdf.

28. **Ralph Propper, Patrick Wong, Son Bui, Jeff Austin, William Vance, Alvaro Alvarado, Bart Croes, and Dongmin Luo.** Ambient and Emission Trends of Toxic Air Contaminants in California. *American Chemical Society: Environmental Science & Technology.* 2015.

29. **Air Resources Board.** ARB's Drayage Truck Regulatory Activities. [Online] http://www.arb.ca.gov/msprog/onroad/porttruck/porttruck.htm.

30. —. Truck and Bus Regulation. *On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation.* [Online] http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm.

31. **The Port of Los Angeles.** Clean Truck Program. [Online] http://www.portoflosangeles.org/ctp/idx_ctp.asp.

32. **South Coast Air Quality Management District.** *The Multiple Air Toxics Exposure Study IV.* 2015.

33. —. Transfer Funds, Appropriate Funding, Execute Purchase Orders, Execute Contrat and Authorize Release of RFQs for the Fifth Multiple Air Toxics Exposure Study. *South Coast Air Quality Management District.* [Online] 2017. http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2017/2017-jul7-009.pdf?sfvrsn=7.

34. **South Coast Air Quality Management District (SCAQMD).** SCAQMD Air Quality Significance Thresholds. [Online] http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2.

35. **California Air Pollution Control Officers Association (CAPCOA).** California Emissions Estimator Model (CalEEMod). [Online] September 2016. www.caleemod.com.

36. **California Air Pollution Control Officers Association.** California Emissions Estimator Model User's Guide. [Online] November 2017. http://www.caleemod.com/.

37. **California Department of Transportation.** EMFAC Software. [Online] http://www.dot.ca.gov/hq/env/air/pages/emfac.htm.

38. **Urban Crossroads, Inc.** *The Homestead Traffic Impact Analysis.* July 2019.

39. —. *The Homestead Vehicle Miles Traveled (VMT) Assessment.* July 2019.

40. **Governor's Office of Planning and Research.** *Technical Advisory on Evaluating Transportation Impacts in CEQA.* 2018.

41. **California Air Pollution Control Officers Association.** Appendix A Calculation Details for CalEEMod. [Online] 2017. http://www.caleemod.com/.

42. **South Coast Air Quality Management District.** *SCAQMD High Cube Warehouse Truck Trip Study White Paper Summary of Busniess Survey Results.* 2014.

43. —. *Localized Significance Thresholds Methodology.* s.l. : South Coast Air Quality Managment District, 2003.

44. **Lake Environmental.** US EPA Models. *Lake Environmental.* [Online] http://www.weblakes.com/download/us_epa.html.

45. **South Coast Air Quality Management District.** Fact Sheet for Applying CalEEMod to Localized Significance Thresholds. [Online] http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf.

46. —. 2003 Air Quality Management Plan. [Online] 2003. http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2003-air-quality-management-plan/2003-aqmp-appendix-v.pdf.

47. **Bay Area Air Quality Management District.** [Online] http://www.baaqmd.gov/.

48. **South Coast Air Quality Management District.** Final 2016 Air Quality Management Plan (AQMP). [Online] March 2017. http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=11.

49. —. *CEQA Air Quality Handbook (1993).* 1993.

50. **City of Eastvale.** City of Eastvale General Plan. [Online] 2012. https://www.eastvaleca.gov/home/showdocument?id=2360.

51. **Urban Crossorads, Inc.** *The Homestead Health Risk Assessment.* 2019.

52. **South Coast Air Quality Management District.** RULE 402 NUISANCE. [Online] http://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-402.pdf.

53. **Goss, Tracy A and Kroeger, Amy.** White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution. [Online] South Coast Air Quality Management District, 2003. http://www.aqmd.gov/rules/ciwg/final_white_paper.pdf.

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5 CERTIFICATIONS

The contents of this air study report represent an accurate depiction of the environmental impacts associated with the proposed The Homestead. 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) 336-5987.

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PROFESSIONAL AFFILIATIONS

AEP – Association of Environmental Planners
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PROFESSIONAL CERTIFICATIONS

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

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APPENDIX 2.1:

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APPENDIX 3.3:

CALEEMOD OPERATIONS (TRUCKS) EMISSIONS MODEL OUTPUTS

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The Homestead

MOBILE SOURCE HEALTH RISK ASSESSMENT

CITY OF EASTVALE

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DECEMBER 26, 2019

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LIST OF ABBREVIATED TERMS

(1)	Reference
µg	Microgram
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
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	The Homestead
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

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EXECUTIVE SUMMARY

This report evaluates the potential mobile source health risk impacts to sensitive receptors (residents) and adjacent workers associated with the development of the proposed Project, more specifically, health risk impacts as a result of exposure to diesel particulate matter (DPM) as a result of heavy-duty diesel trucks accessing the site. This section summarizes the significance criteria and Project mobile source health risks.

The results of the health risk assessment of lifetime cancer risk from Project-generated DPM emissions are provided in Table ES-1 below.

Residential Exposure Scenario:

The residential land use with the greatest potential exposure to Project DPM source emissions is located at 285 feet northeast of the Project site at the northeast corner of Archibald Avenue and Remington Avenue. At the maximally exposed individual receptor (MEIR), the maximum incremental cancer risk attributable to Project DPM source emissions is estimated at 2.49 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 0.0009, which would not exceed the applicable threshold of 1.0. As such, the Project will not cause a significant human health or cancer risk to adjacent residences. All other modeled residential locations in the vicinity of the Project would be exposed to less emissions and therefore less risk than the MEIR identified herein.

Worker Exposure Scenario:

The worker receptor land use with the greatest potential exposure to Project DPM source emissions is located at an existing industrial building immediately adjacent (approximately 10 feet south) of the Project site. At the maximally exposed individual worker (MEIW), the maximum incremental cancer risk impact at this location is 0.63 in one million which is less than the threshold of 10 in one million. Maximum non-cancer risks at this same location were estimated to be 0.002, which would not exceed the applicable threshold of 1.0. As such, the Project will not cause a significant human health or cancer risk to adjacent workers. All other modeled worker locations in the vicinity of the Project would be exposed to less emissions and therefore less risk than the MEIW identified herein.

School Child Exposure Scenario:

The school site land use with the greatest potential exposure to Project DPM source emissions is at the Harada Elementary School located more than 1.5 miles east of the Project site, south of Limonite Avenue. At the maximally exposed individual school child (MEISC), the maximum incremental cancer risk impact attributable to the Project at this location is calculated to be an estimated 0.05 in one million which is less than the significance threshold of 10 in one million. At this same location, non-cancer risks attributable to the Project were calculated to be 0.0001, which would not exceed the applicable significance threshold of 1.0. Any other schools near the Project site would be exposed to less emissions and consequently less impacts than what is disclosed for the MEISC[1]. As such, the Project will not cause a significant human health or cancer risk to nearby school children. It should be noted that there are other schools in the vicinity of the Project that may be located closer to the Project site itself, but these locations do not necessarily experience the maximum concentrations resulting from the emissions generated on the Project site as well as off-site emissions from travel along truck routes. The reason a location located further away may be more impacted is typically a function of meteorological conditions (wind speed, direction) as well as proximity of the receptor to not just on-site sources but also off-site sources such as truck travel along study area roadways.

TABLE ES-1: SUMMARY OF CANCER AND NON-CANCER RISKS

Time Period	Location	Maximum Lifetime Cancer Risk (Risk per Million)	Significance Threshold (Risk per Million)	Exceeds Significance Threshold
30 Year Exposure	Maximum Exposed Sensitive Receptor	2.49	10	NO
25 Year Exposure	Maximum Exposed Worker Receptor	0.63	10	NO
9 Year Exposure	Maximum Exposed School Child Receptor	0.05	10	NO
Time Period	**Location**	**Maximum Hazard Index**	**Significance Threshold**	**Exceeds Significance Threshold**
Annual Average	Maximum Exposed Sensitive Receptor	0.0009	1.0	NO
Annual Average	Maximum Exposed Worker Receptor	0.002	1.0	NO
Annual Average	Maximum Exposed School Child Receptor	0.0001	1.0	NO

1 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 CARB and SCAQMD emissions and modeling analyses, an 80-percent drop-off in pollutant concentrations is expected at approximately 1,000 feet from a distribution center (1).

1 INTRODUCTION

The purpose of this Health Risk Assessment (HRA) is to evaluate Project-related impacts to sensitive receptors (residential, schools) and adjacent workers as a result of heavy-duty diesel trucks accessing the site.

The South Coast Air Quality Management District (SCAQMD) reviewed the conceptual site plan for the proposed project and provided input to the City on the scope of the air quality analysis. SCAQMD identifies that if a proposed Project is expected to generate/attract heavy-duty diesel trucks, which emit diesel particulate matter (DPM), preparation of a mobile source HRA is recommended. 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) and is comprised of all relevant and appropriate procedures presented by the U.S. EPA, California Environmental Protection Agency and SCAQMD. Cancer risk is expressed in terms of expected incremental incidence per million population. The SCAQMD has established an incidence rate of ten (10) persons per million as the maximum acceptable incremental cancer risk due to DPM exposure. This threshold serves to determine whether or not a given project has a potentially significant development-specific and cumulative impact.

The AQMD has published a report on how to address cumulative impacts from air pollution: *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution* (2). In this report the AQMD clearly states (Page D-3):

"…the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for toxic air contaminant (TAC) emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.

Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."

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. Within this analysis, non-carcinogenic exposures of less than 1.0 are considered less-than-significant.

1.1 SITE LOCATION

The proposed The Homestead is located west of Archibald Avenue and on either side of Limonite Avenue, in the City of Eastvale, as shown on Exhibit 1-A. Chino Airport is located approximately one mile west of the Project site. Existing land uses in the Project study area include residential uses north, east, and southeast of the Project site, and existing agricultural use to the west and south (designated as future commercial use) of the Project site.

1.2 PROJECT DESCRIPTION

Exhibit 1-B illustrates the preliminary site plan. As indicated on Exhibit 1-B, the Project is proposed to consist of the following uses:

- 560,291 square feet (sf) of warehousing use
- 520,317 sf of high-cube fulfillment center use

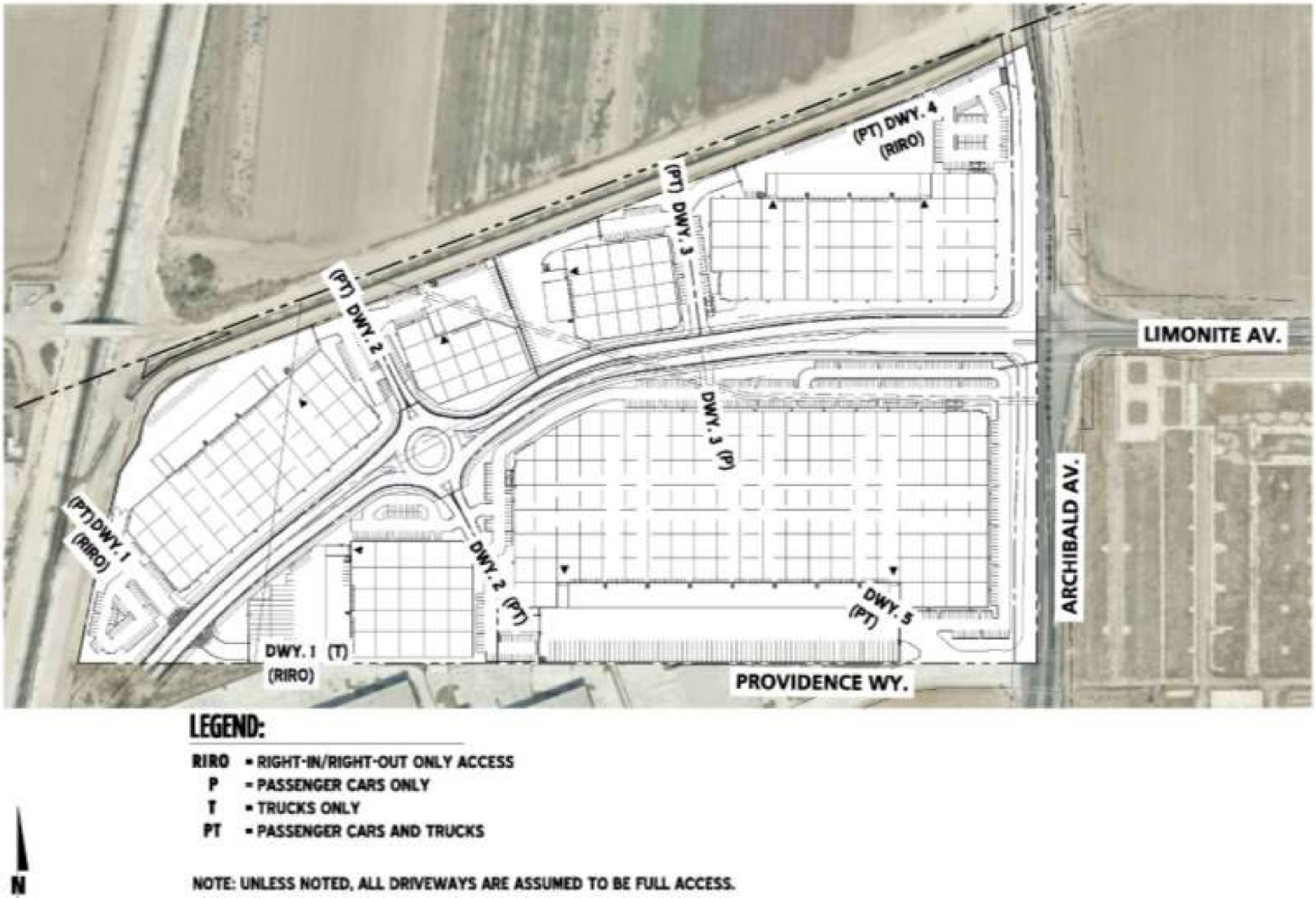
Since the time this HRA was prepared, the site plan has been updated. The current site plan shows 541,756 square feet of warehousing use and 507,631 square feet of high-cube fulfillment center warehouse use. These updated site plan building square footages are less intensive, and as such the number of trips and consequently emissions would decrease. However, for the purposes of this HRA, the higher square footage (and therefore higher trip generation and consequently emissions) has been evaluated in an effort to conduct a conservative analysis and overstate as opposed to understate potential HRA impacts.

The Project is anticipated to be constructed in a single phase by the year 2021. At the time this HRA was prepared, the future tenants of the proposed Project were unknown. This HRA study is intended to describe emission impacts associated with the expected typical 24-hour, seven days per week operational activities at the Project site.

According to *The Homestead Traffic Impact Analysis* (TIA) (Urban Crossroads, Inc., 2019) prepared by Urban Crossroads, Inc., the Project trip generation includes 2,102 two-way trips per day (actual vehicles). The Project trip generation includes 408 two-way truck trips per day (3). This health risk assessment study relies on the actual Project trips (as opposed to the passenger car equivalents) to accurately account for the effect of individual truck trips to adjacent receptors.

EXHIBIT 1-A: LOCATION MAP

EXHIBIT 1-B: SITE PLAN



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2 BACKGROUND

2.1 BACKGROUND ON RECOMMENDED METHODOLOGY

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 Unit Risk Factor (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. Using the 95^{th} percentile URF represents a very conservative (health-protective) risk posed by DPM.
- The emissions derived assume that every truck accessing the project site will idle for 15 minutes under the unmitigated scenario, this is an overestimation of actual idling times and thus conservative.[2] It should be noted that CARB's anti-idling requirements impose a 5-minute maximum idling time and therefore the analysis conservatively overestimates DPM emissions from idling by a factor of 3.

2.2 EMISSIONS ESTIMATION

2.2.1 ON-SITE AND OFF-SITE TRUCK ACTIVITY

Vehicle DPM emissions were estimated using emission factors for particulate matter less than 10µm in diameter (PM_{10}) generated with the 2017 version of the Emission FACtor model (EMFAC) developed by the ARB. EMFAC2017 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 from on-road mobile sources (4). The most recent version of this model, EMFAC2017, incorporates regional motor vehicle data, information and estimates regarding the distribution of vehicle miles traveled (VMT) by speed, and number of starts per day.

Several distinct emission processes are included in EMFAC2017. Emission factors calculated using EMFAC2017 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 EMFAC2017 in EMFAC Mode for vehicles in the Riverside County jurisdiction. 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.

[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, in person, with Jillian Wong, December 22, 2016), 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.

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. Use of 25 miles per hour for off-site vehicle travel along study area roadways is conservative since this speed is less than the posted speed limit on most public streets and generates a higher emissions factor for analytical purposes than using a higher speed. Use of the lower speed also ensures that average speeds throughout the day are appropriately accounted for.

Calculated emission factors are shown at Table 2-1. As a conservative measure, a 2021 EMFAC2017 run was conducted and a static 2021 emissions factor data set was used for the entire duration of analysis herein (e.g., 30 years). Use of 2021 emission factors would overstate potential impacts since this approach assumes that emission factors remain “static” and do not change over time due to fleet turnover or cleaner technology with lower emissions that would incorporated after 2021. Additionally, based on EMFA C2017, Light-Heavy-Duty Trucks comprise of 48.91% diesel, Medium-Heavy-Duty Trucks comprise of 88.92% diesel, and Heavy-Heavy-Duty Trucks comprise of 98.96% diesel trucks and have been accounted for accordingly in the emissions factor generation.

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 (4):

$Emissions_{speedA}$ (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 (4):

$Emissions_{idle}$ (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: 2021 WEIGHTED AVERAGE DPM EMISSIONS FACTORS

Speed	Weighted Average
0 (idling)	0.10561 (g/idle-hr)
5	0.09741 (g/s)
25	0.04032 (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 "2.1". 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, as illustrated on Table 2-2 and 2-3. The modeled emission sources are illustrated on Exhibit 2-A. The modeled truck travel routes included in the HRA are based on the truck trip distributions (inbound and outbound) available from the Project's Traffic Impact Analysis (TIA) (3). The modeled truck route is consistent with the trip distribution patterns identified in the Project's traffic study, is supported by substantial evidence, and was modeled to determine the potential impacts to sensitive receptors along the primary truck routes. The modeling domain was extended along the Project's primary truck route and includes off-site sources in the study area for more than 3 miles. This modeling domain is substantially more conservative than using only a ¼ mile modeling domain, which is supported by substantial evidence since several studies have shown that the greatest potential risks occur within a ¼ mile of the primary source of emissions (5) (in the case of the Project this is the on-site idling and on-site travel).

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.

According to *The Homestead Traffic Impact Analysis* (TIA) (Urban Crossroads, Inc., 2019) prepared by Urban Crossroads, Inc., the Project trip generation includes 2,102 two-way trips per day (actual vehicles). The Project trip generation includes 408 two-way truck trips per day (3). This health risk assessment study relies on the actual Project trips (as opposed to the passenger car equivalents) to accurately account for the effect of individual truck trips to adjacent receptors.

EXHIBIT 2-A MODELED EMISSION SOURCES

N

TABLE 2-2: DPM EMISSIONS FROM PROJECT TRUCKS (2021 ANALYSIS YEAR)

Truck Emission Rates						
Source	Trucks Per Day	VMT [a] (miles/day)	Truck Emission Rate [b] (grams/mile)	Truck Emission Rate [b] (grams/idle-hour)	Daily Truck Emissions [c] (grams/day)	Modeled Emission Rates (g/second)
Building 1 On-Site Idling	33			0.1056	0.87	1.008E-05
Building 2 On-Site Idling	15			0.1056	0.40	4.584E-06
Building 3 On-Site Idling	10			0.1056	0.26	3.056E-06
Building 4 On-Site Idling	16			0.1056	0.42	4.889E-06
Building 5 On-Site Idling	13			0.1056	0.34	3.973E-06
Building 6 On-Site Idling	18			0.1056	0.48	5.500E-06
Building 7 On-Site Idling	99			0.1056	2.61	3.025E-05
Buildings 1 On-Site Travel	66	13.29	0.0974		1.29	1.498E-05
Building 2 On-Site Travel	30	5.74	0.0974		0.56	6.473E-06
Building 3 On-Site Travel	20	1.65	0.0974		0.16	1.865E-06
Building 4 On-Site Travel	32	6.06	0.0974		0.59	6.833E-06
Building 5 On-Site Travel	26	0.99	0.0974		0.10	1.120E-06
Building 6 On-Site Travel	36	7.11	0.0974		0.69	8.020E-06
Building 7 On-Site Travel	198	62.77	0.0974		6.11	7.077E-05
5% Inbound Dwy 6	10	0.18	0.0403		0.01	8.576E-08
15% Inbound Dwy 7	31	9.50	0.0403		0.38	4.433E-06
20% Inbound on Limonite	41	15.39	0.0403		0.62	7.182E-06
40% Inbound on Limonite	82	19.89	0.0403		0.80	9.279E-06
20% Inbound on Limonite	41	9.43	0.0403		0.38	4.401E-06
20% Outbound on Limonite	41	9.43	0.0403		0.38	4.401E-06
75% Outbound on Limonite	153	36.26	0.0403		1.46	1.692E-05
40% Outbound	82	9.79	0.0403		0.39	4.566E-06
40% Outbound	82	1.25	0.0403		0.05	5.820E-07
20% Inbound/Outbound (Limonite Extension)	82	164.26	0.0403		6.62	7.664E-05
40% Inbound/Outbound on Archibald Av.	163	260.79	0.0403		10.51	1.217E-04
40% Inbound/Outbound on Limonite	163	266.63	0.0403		10.75	1.244E-04

[a] Vehicle miles traveled are for modeled truck route only.

[b] Emission rates determined using EMFAC 2017. Idle emission rates are expressed in grams per idle hour rather than grams per mile.

[c] This column includes the total truck travel and truck idle emissions. For idle emissions this column includes emissions based on the assumption that each truck idles for 15 minutes.

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 (EPA's) AERMOD model. For purposes of this analysis, the Lakes AERMOD View (Version 9.8.4) was used to calculate annual average particulate concentrations associated with site operations. Lakes AERMOD View was utilized to incorporate the EPA's latest AERMOD Version 19191 (7).

The model offers additional flexibility by allowing the user to assign an initial release height and vertical dispersion parameters for mobile sources representative of a roadway. For this HRA, the roadways were modeled as adjacent volume sources. Roadways were modeled using the U.S. EPA's haul route methodology for modeling of on-site and off-site truck movement. More specifically, the Haul Road Volume Source Calculator in Lakes AERMOD View has been utilized to determine the release height parameters. Based on the US EPA methodology, the Project's modeled sources would result in a release height of 3.49 meters, and an initial lateral dimension of 4.0 meters, and an initial vertical dimension of 3.25 meters.

SCAQMD required model parameters are presented in Table 2-4 (8). The model requires additional input parameters including emission data and local meteorology. Meteorological data from the SCAQMD's Chino Airport monitoring station (SRA 33) was used to represent local weather conditions and prevailing winds (9). A wind rose exhibit of the Peris monitoring station is provided at Exhibit 2-B.

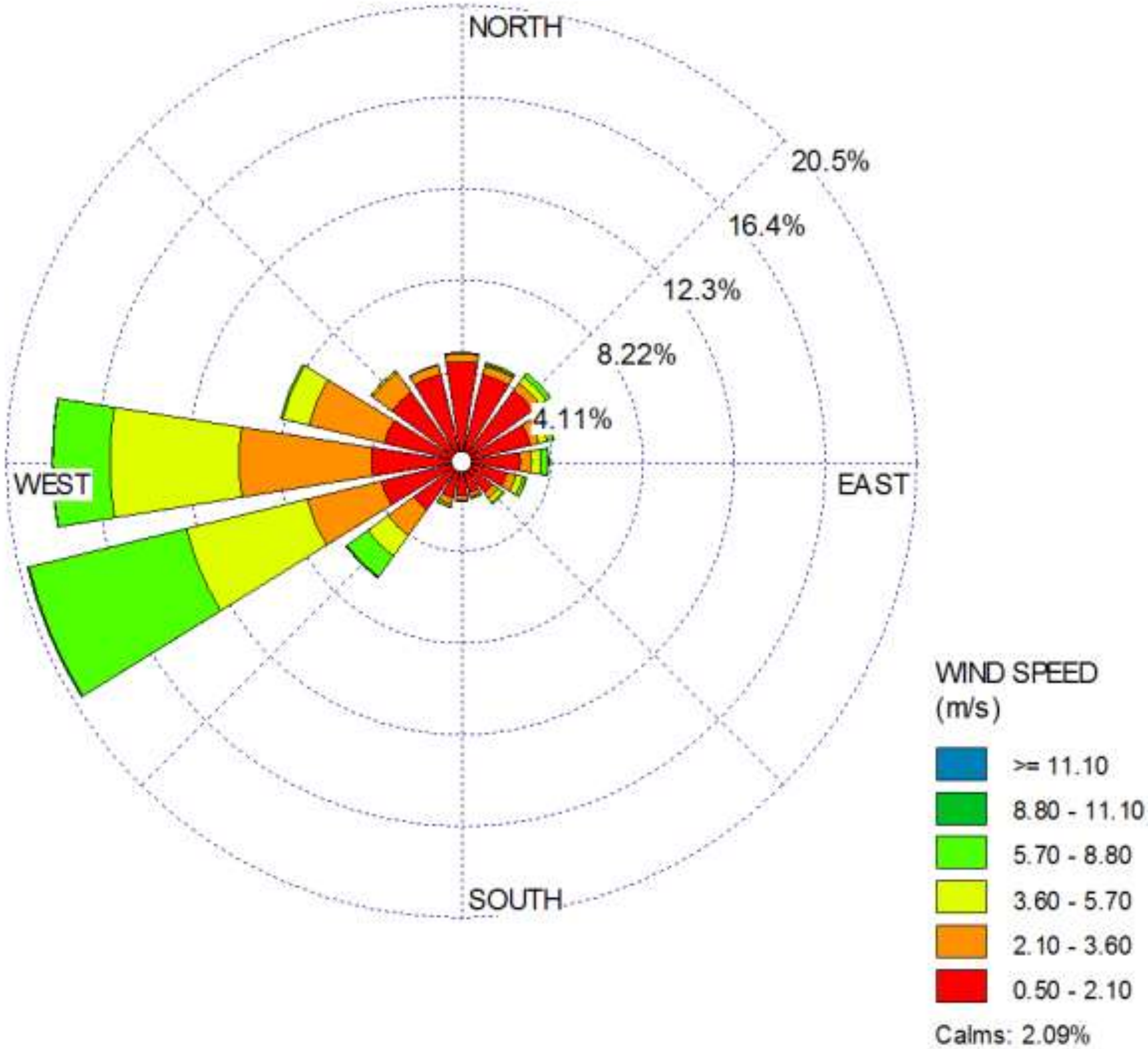
TABLE 2-4: AERMOD MODEL PARAMETERS

Dispersion Coefficient	Urban
Population	2,035,210
Terrain	Elevated (Regulatory Default)
Averaging Time	1 year (5-year Meteorological Data Set)
Receptor Height	0 meters (Regulatory Default)

Universal Transverse Mercator (UTM) coordinates for World Geodetic System (WGS) 84 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 "2.1".

Modeled sensitive receptors were placed at residential and non-residential locations. Based on recommendations from SCAQMD staff, a receptor grid with a maximum of 100 meters spacing were placed at residential and worker locations to ensure that the maximum impacts are properly analyzed.

EXHIBIT 2-B: WIND ROSE (SRA 33)



Receptors may be placed at applicable structure locations for residential and worker property and not necessarily the boundaries of these uses. It should be noted that the primary purpose of receptor placement is focused on long-term exposure. For example, the HRA evaluates the potential health risks to residential and worker over a period of 30 or 25 years of exposure, respectively. As such, even though it is unlikely to occur in practical terms (because the amount of time spent indoors), this study assumes that a resident or worker would be exposed over a long-period of time for 12 or 24-hours per day at the structure where they reside or work.

Furthermore, worker receptors immediately adjacent to the Project site have been evaluated in the HRA. Any impacts to workers located further away from the Project site than the modeled worker receptors would have a lesser impact than what has already been disclosed in the HRA at the MEIW. Exhibit 2-C illustrates the nearest modeled receptors in the Project vicinity.

Discrete variants for daily breathing rates, exposure frequency, and exposure duration were obtained from relevant distribution profiles presented in the 2015 OEHHA Guidelines. Tables 2-5 through 2-7 summarize the Exposure Parameters for Residents, Offsite Worker, and School exposure scenarios based on 2015 OEHHA Guidelines. Appendix 2.2 includes the detailed risk calculation.

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 10 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, 10 in one million is used as the cancer risk threshold for the proposed Project.

Excess cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens over a specified exposure duration. The estimated risk is expressed as a unitless probability. The cancer risk attributed to a chemical is calculated by multiplying the chemical intake or dose at the human exchange boundaries (e.g., lungs) by the chemical-specific cancer potency factor (CPF). A risk level of 10 in one million implies a likelihood that up to 10 people, out of one million equally exposed people would contract cancer if exposed continuously (24 hours per day) to the levels of toxic air contaminants over a specified duration of time. As an example, the risk of dying from accidental drowning is 1,000 in a million which is 100 times more than the SCAQMD's threshold of 10 in one million, the nearest comparison to 10 in one million is the 7 in one million lifetime chance that an individual would be struck and killed by lightning (10).

EXHIBIT 2-C: NEAREST MODELED RECEPTOR LOCATIONS

Color	Group Name
	Resident
	School
	Worker

TABLE 2-5: EXPOSURE ASSUMPTIONS FOR INDIVIDUAL CANCER RISK (30 YEAR RESIDENTIAL)

Age	Daily Breathing Rate (L/kg-day)	Age Specific Factor	Exposure Duration (years)	Fraction of Time at Home	Exposure Frequency (days/year)	Exposure Time (hours/day)
-0.25 to 0	361	10	0.25	0.85	350	24
0 to 2	1,090	10	2	0.85	350	24
2 to 16	572	3	14	0.72	350	24
16 to 30	261	1	14	0.73	350	24

TABLE 2-6: EXPOSURE ASSUMPTIONS FOR INDIVIDUAL CANCER RISK (25 YEAR WORKER)

Age	Daily Breathing Rate (L/kg-day)	Age Specific Factor	Exposure Duration (years)	Exposure Frequency (days/year)	Exposure Time (hours/day)
16 to 41	230	1	25	250	12

TABLE 2-7: EXPOSURE ASSUMPTIONS FOR INDIVIDUAL CANCER RISK (9 YEAR SCHOOL CHILD)

Age	Daily Breathing Rate (L/kg-day)	Age Specific Factor	Exposure Duration (years)	Exposure Frequency (days/year) [a]	Exposure Time (hours/day)
9 year duration	572	3	9	180	12

[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.

Guidance from CARB and the California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA) recommends a refinement to the standard point estimate approach when alternate human body weights and breathing rates are utilized to assess risk for susceptible subpopulations such as children. For the inhalation pathway, the procedure requires the incorporation of several discrete variates to effectively quantify dose. 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, the following dose algorithm was utilized.

DOSEair = (Cair × [BR/BW] × A × EF) x (1 x 10 -6)

Where:

DOSEair	=	chronic daily intake (mg/kg/day)
Cair	=	concentration of contaminant in air (ug/m3)
[BR/BW]	=	daily breathing rate normalized to body weight (L/kg BW-day)
A	=	inhalation absorption factor
EF	=	exposure frequency (days/365 days)
BW	=	body weight (kg)
1 x 10 -6	=	conversion factors (ug to mg, L to m3)

RISKair = DOSEair x CPF x ED/AT

Where:

DOSEair	=	chronic daily intake (mg/kg/day)
CPF	=	cancer potency factor
ED	=	number of years within particular age group
AT	=	averaging time

2.5 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:

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

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

Where:

HI_{DPM}	=	Hazard Index; an expression of the potential for non-cancer health effects.
C_{DPM}	=	Annual average DPM concentration ($\mu g/m^3$).

REL_{DPM} = Reference exposure level (REL) for DPM; the DPM 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, and thus is less than significant.

2.6 POTENTIAL PROJECT-RELATED DPM SOURCE CANCER AND NON-CANCER RISKS[3]

Residential Exposure Scenario:

The residential land use with the greatest potential exposure to Project DPM source emissions is located at 285 feet northeast of the Project site at the northeast corner of Archibald Avenue and Remington Avenue. At the maximally exposed individual receptor (MEIR), the maximum incremental cancer risk attributable to Project DPM source emissions is estimated at 2.49 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 0.0009, which would not exceed the applicable threshold of 1.0. As such, the Project will not cause a significant human health or cancer risk to adjacent residences. All other modeled residential locations in the vicinity of the Project would be exposed to less emissions and therefore less risk than the MEIR identified herein.

Worker Exposure Scenario:

The worker receptor land use with the greatest potential exposure to Project DPM source emissions is located at an existing industrial building immediately adjacent (approximately 10 feet south) of the Project site. At the maximally exposed individual worker (MEIW), the maximum incremental cancer risk impact at this location is 0.63 in one million which is less than the threshold of 10 in one million. Maximum non-cancer risks at this same location were estimated to be 0.002, which would not exceed the applicable threshold of 1.0. As such, the Project will not cause a significant human health or cancer risk to adjacent workers. All other modeled worker locations in the vicinity of the Project would be exposed to less emissions and therefore less risk than the MEIW identified herein.

School Child Exposure Scenario:

The school site land use with the greatest potential exposure to Project DPM source emissions is at the Harada Elementary School located more than 1.5 miles east of the Project site, south of Limonite Avenue. At the maximally exposed individual school child (MEISC), the maximum incremental cancer risk impact attributable to the Project at this location is calculated to be an estimated 0.05 in one million which is less than the significance threshold of 10 in one million. At this same location, non-cancer risks attributable to the Project were calculated to be 0.0001, which would not exceed the applicable significance threshold of 1.0. Any other schools near the Project site would be exposed to less emissions and consequently less impacts than what is

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.

disclosed for the MEISC[4]. As such, the Project will not cause a significant human health or cancer risk to nearby school children. It should be noted that there are other schools in the vicinity of the Project that may be located closer to the Project site itself, but these locations do not necessarily experience the maximum concentrations resulting from the emissions generated on the Project site as well as off-site emissions from travel along truck routes. The reason a location located further away may be more impacted is typically a function of meteorological conditions (wind speed, direction) as well as proximity of the receptor to not just on-site sources but also off-site sources such as truck travel along study area roadways.

4 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 CARB and SCAQMD emissions and modeling analyses, an 80-percent drop-off in pollutant concentrations is expected at approximately 1,000 feet from a distribution center (1).

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3 REFERENCES

1. **South Coast Air Quality Managment District.** Mobile Source Toxics Analysis. [Online] 2003. http://www.aqmd.gov/ceqa/handbook/mobile_toxic/mobile_toxic.html.
2. **Goss, Tracy A and Kroeger, Amy.** White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution. [Online] South Coast Air Quality Management District, 2003. http://www.aqmd.gov/rules/ciwg/final_white_paper.pdf.
3. **Urban Crossroads, Inc.** *The Homestead Traffic Impact Analysis.* 2019.
4. **California Department of Transportation.** EMFAC Software. [Online] http://www.dot.ca.gov/hq/env/air/pages/emfac.htm.
5. **Air Resources Board.** *Air Quality and Land Use Handbook: A Community Health Perspective.* 2005.
6. **Wong, Jillian.** *Planning, Rule Development & Area Sources.* December 22, 2016.
7. **Environmental Protection Agency.** User's Guide for the AMS/EPA Regulatory Model (AERMOD). [Online] 2019. https://www3.epa.gov/ttn/scram/models/aermod/aermod_userguide.pdf.
8. —. User's Guide for the AMS/EPA Regulatory Model - AERMOD. [Online] September 2004. http://www.epa.gov/scram001/7thconf/aermod/aermodugb.pdf.
9. **South Coast Air Quality Management District.** *Air Quality Reporting.* [pdf] Diamond Bar : Sierra Wade Associates, 1999.
10. **National Safety Council.** Injury Fact Chart. [Online] [Cited: September 18, 2019.] https://www.nsc.org/work-safety/tools-resources/injury-facts/chart.

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4 CERTIFICATION

The contents of this health risk assessment represent an accurate depiction of the impacts to sensitive receptors associated with the proposed The Homestead 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) 336-5987.

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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

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APPENDIX 2.1:

AERMOD MODEL INPUT/OUTPUT

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APPENDIX 2.2:

RISK CALCULATIONS