Health Risk Assessment

13131 Los Angeles Street Industrial Project

Irwindale, California

Prepared For:

Community Development Department, Planning Division
5050 North Irwindale Avenue
Irwindale, California

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ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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LIST OF ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
ASF	Age sensitivity factor
ATCM	Air Toxic Control Measure
Basin	South Coast Air Basin
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAA	California Clean Air Act
DOORS	Diesel Off-Road Reporting System
DPM	Diesel Particulate Matter
EMFAC	EMission FACtor model
FAH	Fraction of time at home

LIST OF ACRONYMS AND ABBREVIATIONS

FCAA	federal Clean Air Act
HAP	Hazardous Air Pollutants
HRA	Health Risk Assessment
kg	Kilogram
MSAT	Mobile Source Air Toxic
NAAQS	National Ambient Air Quality Standards
NESHAPs	National Emissions Standards for Hazardous Air Pollutants
NO_X	Oxides of Nitrogen
O_3	Ozone
OEHHA	Office of Environmental Health Hazard Assessment
PERP	Portable Equipment Registration Program
PM	Particulate matter
PM_{10}	Particulate matter less than 10 microns in diameter
Project	13131 Los Angeles Street Industrial Project
REL	Reference Exposure Level
Risk Reduction Plan	Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles
SCAQMD	South Coast Air Quality Management District
SRA	Source receptor area
TACs	Toxic Air Contaminants
USEPA	U.S. Environmental Protection Agency
$\mu g/m^3$	Micrograms per cubic meter

1.0   INTRODUCTION

This report evaluates the potential health risks associated with the 13131 Los Angeles Street Industrial Project (Project) proposed in Irwindale, California. The purpose of this Health Risk Assessment (HRA) is to evaluate potential health risks associated with Toxic Air Contaminants (TAC) including Diesel Particulate Matter (DPM) resulting from the implementation of the proposed Project (Project). This Health Risk Assessment was prepared in accordance with the requirements of the South Coast Air Quality Management District (SCAQMD) and guidance from the Office of Environmental Health Hazard Assessment (OEHHA) to determine if health risks are likely to occur from the proposed Project. Further, this assessment was prepared in consideration of the Notice of Preparation comment letters received from both the SCAQMD and California Air Resources Board (CARB) as presented in Appendix A of the Draft EIR prepared for the Project. Technical data is included as see Appendix A, *Dispersion Modeling Data.*
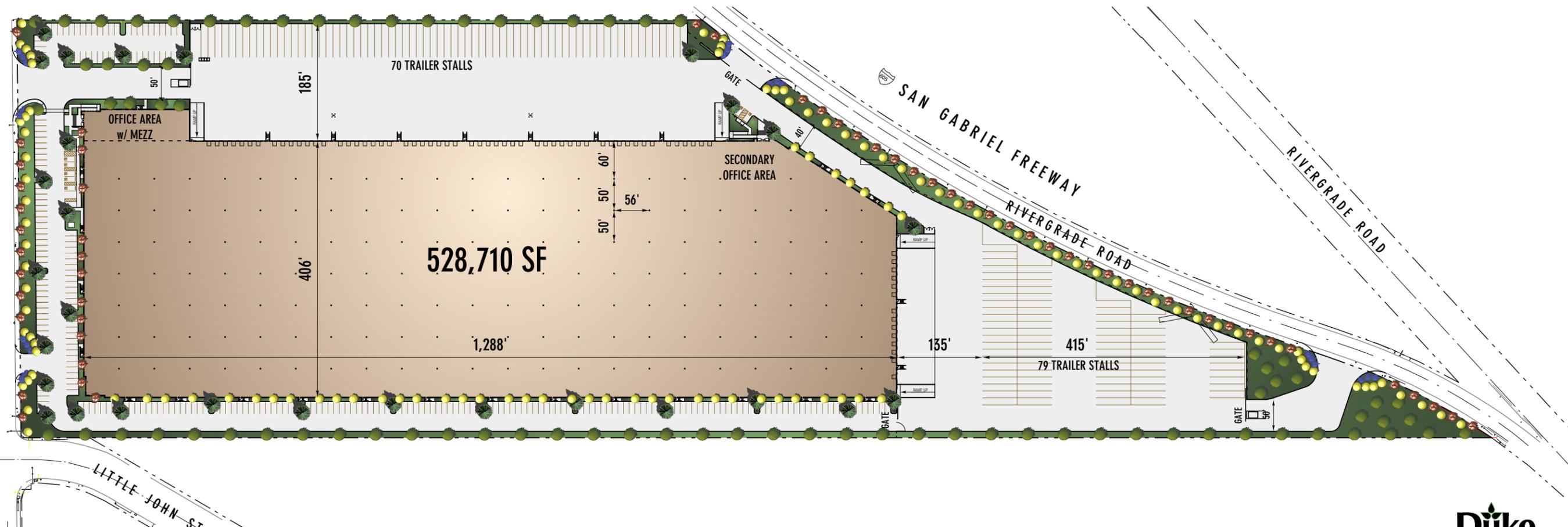
1.1   Project Description and Location

The Project site is located in the City of Irwindale, located in central Los Angeles County. The Project site is an ±24.88-acre lot located along Rivergrade Road and Los Angeles Street. The irregular shaped site is generally bound by Interstate 605 to the north and west, industrial uses and residences located in the City of Baldwin Park to the east, and Los Angeles Street to the south. The Project is proposing a 528,710 square foot concrete tilt-up building that will be used for industrial purposes (see Figure 1. *Site Plan*). The site has been previously developed as an industrial use and is currently occupied with multiple buildings proposed from demolition.
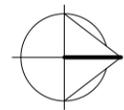
The Project site is designated by the City of Irwindale General Plan as "Industrial/Business Park". According to the General Plan, the Industrial/Business Park designation allows for office, manufacturing, and warehouse uses, including commercial manufacturing, light manufacturing, and heavy manufacturing.

SITE PLAN

LOS ANGELES STREET

LITTLE JOHN ST

70 TRAILER STALLS

50'

185'

OFFICE AREA w/ MEZZ

RAMP UP

SECONDARY OFFICE AREA

528,710 SF

406'

1,288'

60'

50'

50'

50'

56'

GATE

SAN GABRIEL FREEWAY

RIVERGRADE ROAD

RIVERGRADE ROAD

40'

135'

415'

79 TRAILER STALLS

RAMP UP

RAMP UP

RAMP UP

GATE

GATE

30'

Duke REALTY

RGA
Office of Architectural Design
15231 Alton Parkway, Suite 100
Irvine, CA 92618
T 949-341-0920
FX 949-341-0922

Location: N:\2019\2019-030 Industrial Spec Tilt-Up Project\MAPS\Borders\Irwindale_Industrial_Spec_Tilt_Up_Site_Plan.mxd (AA)-mapping_guest 7/9/2019

Map Date: 7/9/2019
Source: RGA

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Figure 1 Site Plan

2019-030 Irwindale Industrial Spec Tilt-Up Project

2.0 HEALTH RISK ASSESSMENT

2.1 Environmental Setting

2.1.1 Climate and Meteorology

The CARB divides the State into 15 air basins that share similar meteorological and topographical features. The Project site lies within the central portion of the South Coast Air Basin (Basin). The Basin is a 6,600-square mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. The Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties, in addition to the San Gorgonio Pass area in Riverside County. The Basin's terrain and geographical location (i.e., a coastal plain with connecting broad valleys and low hills) determine its distinctive climate.

Climate

The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. The climate is mild and tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The extent and severity of the air pollution problem in the Basin is a function of the area's natural physical characteristics (weather and topography), as well as manmade influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of pollutants throughout the Basin. These factors along with applicable regulations are discussed below.

The average annual temperature varies little throughout the Basin, averaging 75°F. However, with a less-pronounced oceanic influence, the eastern inland portions of the Basin show greater variability in annual minimum and maximum temperatures. All portions of the Basin have had recorded temperatures over 100°F in recent years.

Meteorology

Although the Basin has a semi-arid climate, the air near the surface is moist due to the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought into the Basin by offshore winds, the ocean effect is dominant. Periods with heavy fog are frequent, and low stratus clouds, occasionally referred to as "high fog," are a characteristic climate feature. Annual average relative humidity is 70 percent at the coast and 57 percent in the eastern part of the Basin. Precipitation in the Basin is typically nine to 14 inches annually and is rarely in the form of snow or hail due to typically warm weather. The frequency and amount of rainfall is greater in the coastal areas of the Basin.

A temperature inversion is defined as an increase in temperature with height, or to the layer within which such an increase occurs. The height of the inversion is important in determining pollutant concentration. When the inversion is approximately 2,500 feet above sea level, the sea breezes carry the pollutants inland to escape over the mountain slopes or through the passes. At a height of 1,200 feet, the terrain prevents the pollutants from entering the upper atmosphere, resulting in a settlement in the foothill communities.

Below 1,200 feet, the inversion puts a tight lid on pollutants, concentrating them in a shallow layer over the entire coastal basin. Inversions are usually lower before sunrise than during the day. Mixing heights for inversions are lower in the summer and more persistent, being partly responsible for the high levels of ozone (O_3) observed during summer months in the Basin. Smog in southern California is generally the result of these temperature inversions combining with coastal day winds and local mountains to contain the pollutants for long periods of time, allowing them to form secondary pollutants by reacting with sunlight. The Basin has a limited ability to disperse these pollutants due to typically low wind speeds.

The area in which the Project is located offers clear skies and sunshine, yet is still susceptible to air inversions. These inversions trap a layer of stagnant air near the ground, where it is then further loaded with pollutants. These inversions cause haziness, which is caused by moisture, suspended dust, and a variety of chemical aerosols emitted by trucks, automobiles, furnaces, and other sources.

Toxic Air Contaminants

TACs are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes approximately 200 compounds, including particulate emissions from diesel-fueled engines.

Hazardous Air Pollutants (HAPs) is a term used by the federal Clean Air Act (FCAA) that includes a variety of pollutants generated or emitted by industrial production activities. Identified as TACs under the California Clean Air Act (CCAA), 10 have been singled out through ambient air quality data as being the most substantial health risk in California. Direct exposure to these pollutants has been shown to cause cancer, birth defects, damage to the brain and nervous system, and respiratory disorders. CARB provides emission inventories for only the larger air basins.

TACs do not have ambient air quality standards because no safe levels of TACs can be determined. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. The requirements of the Air Toxic "Hot Spots" Information and Assessment Act (Assembly Bill [AB] 2588) apply to facilities that use, produce, or emit toxic chemicals. Facilities subject to the toxic emission inventory requirements of the act must prepare and submit toxic emission inventory plans and reports, and periodically update those reports.

Toxic contaminants often result from fugitive emissions during fuel storage and transfer activities and from leaking valves and pipes. For example, the electronics industry, including semiconductor manufacturing, uses highly toxic chlorinated solvents in semiconductor production processes. Sources of air toxics go beyond industry, however. Automobile exhaust also contains toxic air pollutants such as benzene and 1,3-butadiene. The following are health effects related to common TACs:

Acetaldehyde

Acetaldehyde is directly emitted into the atmosphere and is also formed in the atmosphere from photochemical oxidation. Acetaldehyde is generated as exhaust from mobile sources and fuel

combustion from stationary internal combustion engines, boilers, and process heaters. Acetaldehyde is a carcinogen that can also cause chronic non-cancer toxicity in the respiratory system. Symptoms of chronic intoxication of acetaldehyde in humans resemble those of alcoholism. The primary short-term effect of inhalation exposure to acetaldehyde is irritation of the eyes, skin, and respiratory tract. At higher exposure levels, erythematic, coughing, and pulmonary edema, and necrosis may also occur.

Benzene

Approximately 84 percent of the benzene emitted in California comes from motor vehicles, including evaporative leakage and unburned fuel exhaust. Benzene is highly carcinogenic and occurs throughout California. Benzene also has non-cancer health effects. Brief inhalation exposure to high concentrations can cause central nervous system symptoms of nausea, tremors, drowsiness, dizziness, headache, intoxication, and unconsciousness.

Neurological symptoms of inhalation exposure to benzene include drowsiness, dizziness, headaches, and unconsciousness. Ingestion of large amounts of benzene may result in vomiting, dizziness, and convulsions. Exposure to liquid and vapor may irritate the skin, eyes, and upper respiratory tract. Redness and blisters may result from dermal exposure to benzene. Chronic inhalation of certain levels of benzene causes blood disorders because benzene specifically affects bone marrow, which produces blood cells. Aplastic anemia, excessive bleeding, and damage to the immune system (by changes in blood levels of antibodies and loss of white blood cells) may develop. Increased incidence of leukemia (cancer of the tissues that form white blood cells) has been observed in humans occupationally exposed to benzene.

1,3-Butadiene

The majority of 1,3-butadiene emissions comes from incomplete combustion of gasoline and diesel fuels. 1,3-butadiene has been identified as a carcinogen in California. Butadiene vapors at elevated levels cause neurological effects such as blurred vision, fatigue, headache, and vertigo. Dermal exposure to 1,3-butadiene causes a sensation of cold, followed by a burning sensation, and can lead to frostbite. Chronic exposure to 1,3-butadiene via inhalation has been shown to result in an increase in cardiovascular diseases, and increase in the occurrence of leukemia, and an increased incidence of respiratory, bladder, stomach, and lymphatic-hematopoietic cancers.

Carbon Tetrachloride

The primary sources of carbon tetrachloride in California include chemical manufacturing facilities and petroleum refineries. Carbon tetrachloride has been identified as a probable human carcinogen in California. Carbon tetrachloride is also a central nervous system depressant and mild eye and respiratory tract irritant. Acute inhalation and oral exposures to high levels of carbon tetrachloride can damage the liver and kidneys in humans and animals. Symptoms of acute exposure in humans include headache, weakness, lethargy, nausea, and vomiting.

Chromium, Hexavalent

Chromium planting and other metal finishing processes are the primary sources of hexavalent chromium emissions in California. California has identified hexavalent chromium as a carcinogen. Exposure to

inhaled hexavalent chromium may result in lung cancer, and short-term exposure symptoms may include renal toxicity, gastrointestinal hemorrhage, and intravascular hemolysis.

Inhalation exposure of hexavalent exposure targets the respiratory tract. Exposure to very high concentrations of hexavalent chromium can include burns, effects on the respiratory tract such as perforations and ulcerations of the septum, bronchitis, decreased pulmonary function, pneumonia, asthma, and nasal itching and soreness. Chronic human exposure to high levels of hexavalent chromium by inhalation or oral exposure may adversely affect the liver, kidney, and gastrointestinal and immune system.

Para-Dichlorobenzene

The primary sources of para-dichlorobenzene include consumer products such as non-aerosol insect repellents and solid air fresheners. These sources contribute 99 percent of statewide para-dichlorobenzene emissions. In California, para-dichlorobenzene has been identified as a carcinogen. Acute exposure to 1,4-dichlorobenzene via inhalation in humans results in irritation to the eyes, skin, and throat. In addition, long-term inhalation exposure may affect the liver, skin, and central nervous system.

Formaldehyde

Formaldehyde is both directly emitted into the atmosphere and formed in the atmosphere as a result of photochemical oxidation. Formaldehyde is a product of incomplete combustion, and one of the primary sources of formaldehyde is vehicular exhaust. Formaldehyde can also be found in many consumer products as an antimicrobial agent and is used in fumigants and soil disinfectants.

Acute formaldehyde inhalation exposure can result in eye, nose, and throat irritation and effects on the nasal cavity. Other effects seen from exposure to high levels of formaldehyde in humans are coughing, wheezing, chest pains, and bronchitis. Chronic inhalation exposure to formaldehyde has been associated with respiratory symptoms and eye, nose, and throat irritation. In California, formaldehyde has been identified as a carcinogen, and occupational studies have shown associations between exposure to formaldehyde and increased incidence of lung and nasopharyngeal cancer.

Methylene Chloride

Methylene chloride is a solvent used in paint stripping operations and as a blowing and cleaning agent in the manufacture of polyurethane foam and plastic. Paint removers account for the largest use of methylene chloride in California. Inhalation exposure to extremely high levels of methylene chloride can be fatal to humans. Acute inhalation exposure to high levels of methylene chloride can result in decreased visual, auditory, and psychomotor functions, but these effects are reversible once exposure ceases. Methylene chloride also irritates the nose and throat at high concentrations. The major effects from chronic inhalation exposure to methylene chloride are headaches, dizziness, nausea, and memory loss. Chronic exposure can also lead to bone marrow, hepatic, and renal toxicity. California considers methylene chloride to be carcinogenic.

Perchloroethylene

Perchloroethylene is used as a solvent, primarily in dry cleaning operations. Perchloroethylene is also used in degreasing operations, paints and coatings, adhesives, aerosols, specialty chemical production, printing inks, silicones, rug shampoos and laboratory solvents. Perchloroethylene vapors are irritating to the eyes and respiratory tract and chronic exposure can result in liver toxicity, kidney dysfunction, and neurological disorders. California identifies perchloroethylene as a carcinogen.

Diesel Particulate Matter

DPM is emitted from both mobile and stationary sources. In California, on-road diesel-fueled engines contribute approximately 24 percent of the statewide total, with an additional 71 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources contribute about five percent of total DPM. It should be noted that CARB has developed several plans and programs to reduce diesel emissions such as the Diesel Risk Reduction Plan, the Statewide Portable Equipment Registration Program (PERP), and the Diesel Off-Road Reporting System (DOORS). The PERP and DOORS programs allow owners or operators of portable engines and certain other types of equipment can register their units in order to operate their equipment throughout California without having to obtain individual permits from local air districts.

Diesel exhaust and many individual substances contained in it (including arsenic, benzene, formaldehyde, and nickel) have the potential to contribute to mutations in cells that can lead to cancer. Long-term exposure to diesel exhaust particles poses the highest cancer risk of any TAC evaluated by OEHHA. CARB estimates that about 70 percent of the cancer risk that the average Californian faces from breathing toxic air pollutants stems from diesel exhaust particles.

In its comprehensive assessment of diesel exhaust, OEHHA analyzed more than 30 studies of people who worked around diesel equipment, including truck drivers, railroad workers, and equipment operators. The studies showed these workers were more likely to develop lung cancer than workers who were not exposed to diesel emissions. These studies provide strong evidence that long-term occupational exposure to diesel exhaust increases the risk of lung cancer. Using information from OEHHA's assessment, CARB estimates that diesel particle levels measured in California's air in 2000 could cause 540 "excess" cancers in a population of one million people over a 70-year lifetime. Other researchers and scientific organizations, including the National Institute for Occupational Safety and Health, have calculated cancer risks from diesel exhaust similar to those developed by OEHHA and CARB.

Exposure to diesel exhaust can have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks.

Diesel engines are a major source of fine particulate pollution. The elderly and people with emphysema, asthma, and chronic heart and lung disease are especially sensitive to fine-particle pollution. Numerous

studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. Because children's lungs and respiratory systems are still developing, they are also more susceptible than healthy adults to fine particles. Exposure to fine particles is associated with increased frequency of childhood illnesses and can also reduce lung function in children. In California, diesel exhaust particles have been identified as a carcinogen.

Sensitive Receptors

Sensitive populations are more susceptible to the effects of air pollution than is the general population. Sensitive populations (sensitive receptors) that are in proximity to localized sources of toxics are of particular concern. Land uses considered sensitive receptors include residences, schools, playgrounds, childcare centers, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. Table 1 lists the distances and locations of sensitive receptors within the Project vicinity. The distances depicted in Table 1 are based on the distance from the Project site to the vicinity sensitive receptors.

Table 1. Nearest Sensitive Receptors			
Type	Distance from Project Site at the Nearest (feet)1	Direction from Project Site	Location
Residential Neighborhood	670	East	East of Little John Street
School (Walnut Elementary School)	2,115	Northeast	East of Center Street

Source: [1]Google Earth 2019

2.2   Regulatory Framework

2.2.1   Federal

Clean Air Act

The FCAA was amended in 1990 to address a large number of air pollutants that are known to cause or may reasonably be anticipated to cause adverse effects to human health or adverse environmental effects. 188 specific pollutants and chemical groups were initially identified as HAPs, and the list has been modified over time. The FCAA Amendments included new regulatory programs to control acid deposition and for the issuance of stationary source operating permits.

In 2001, the U.S. Environmental Protection Agency (USEPA) issued its first Mobile Source Air Toxics Rule, which identified 21 mobile source air toxic (MSAT) compounds as being HAPs that required regulation. A subset of six of these MSAT compounds were identified as having the greatest influence on health and included benzene, 1,3-butadiene, formaldehyde, acrolein, acetaldehyde, and DPM. More recently, the USEPA issued a second MSAT Rule in February 2007, which generally supported the findings in the first rule and provided additional recommendations of compounds having the greatest impact on health. The rule also identified several engine emission certification standards that must be implemented. Unlike the

criteria pollutants, toxics do not have National Ambient Air Quality Standards (NAAQS) making evaluation of their impacts more subjective.

National Emissions Standards for Hazardous Air Pollutants (NESHAPs) were incorporated into a greatly expanded program for controlling toxic air pollutants. The provisions for attainment and maintenance of the NAAQS were substantially modified and expanded. Other revisions included provisions regarding stratospheric ozone protection, increased enforcement authority, and expanded research programs.

Section 112 of the FCAA Amendments governs the federal control program for HAPs. NESHAPs are issued to limit the release of specified HAPs from specific industrial sectors. These standards are technology-based, meaning that they represent the best available control technology an industrial sector could afford. The level of emissions controls required by NESHAPs are not based on health risk considerations because allowable releases and resulting concentrations have not been determined to be safe for the general public. The FCAA does not establish air quality standards for HAPs that define legally acceptable concentrations of these pollutants in ambient air.

2.2.2 State

California Air Resources Board

CARB's statewide comprehensive air toxics program was established in 1983 with AB 1807 the Toxic Air Contaminant Identification and Control Act (Tanner Air Toxics Act of 1983). AB 1807 created California's program to reduce exposure to air toxics and sets forth a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an airborne toxics control measure (ATCM) for sources that emit designated TACs. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions.

CARB also administers the state's mobile source emissions control program and oversees air quality programs established by state statute, such as AB 2588, the Air Toxics "Hot Spots" Information and Assessment Act of 1987. Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a health risk assessment (HRA) and, if specific thresholds are exceeded, required to communicate the results to the public in the form of notices and public meetings. In September 1992, the "Hot Spots" Act was amended by Senate Bill 1731, which required facilities that pose a significant health risk to the community to reduce their risk through a risk management plan.

Diesel Risk Reduction Plan

The identification of DPM as a TAC in 1998 led CARB to adopt the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (Risk Reduction Plan) in October 2000. The Risk Reduction Plan's goals include an 85 percent reduction in DPM by 2020 from the 2000 baseline (CARB 2000). The Risk Reduction Plan includes regulations to establish cleaner new diesel engines, cleaner in-use diesel engines (retrofits), and cleaner diesel fuel.

Truck and Bus Regulation Reducing Emissions from Existing Diesel Vehicles

On December 12, 2008, CARB approved the Truck and Bus Regulation to significantly reduce particulate matter (PM) and oxides of nitrogen (NO_X) emissions from existing diesel vehicles operating in California. The regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Heavier trucks must be retrofitted with PM filters beginning January 1, 2012, and older trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses would need to have 2010 model year engines or equivalent.

The regulation applies to nearly all privately and federally owned diesel fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating greater than 14,000 pounds. Small fleets with three or fewer diesel trucks can delay compliance for heavier trucks by reporting and there are a number of extensions for low-mileage construction trucks, early PM filter retrofits, adding cleaner vehicles, and other situations. Privately and publicly owned school buses have different requirements.

Heavy-Duty Vehicle Idling Emission Reduction Program

The purpose of the CARB ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling is to reduce public exposure to diesel particulate matter and criteria pollutants by limiting the idling of diesel-fueled commercial vehicles.[1] The driver of any vehicle subject to this ATCM is prohibited from idling the vehicle's primary diesel engine for greater than five minutes at any location and is prohibited from idling a diesel-fueled auxiliary power system for more than five minutes to power a heater, air conditioner, or any ancillary equipment on the vehicle if it has a sleeper berth and the truck is located within 100 feet of a restricted area (homes and schools).

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

2.2.3   *Local*

South Coast Air Quality Management District

The CCAA provides the SCAQMD with the authority to manage transportation activities at indirect sources and regulate stationary source emissions. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution. An example would be the motor vehicles at an intersection, a mall, and on highways. As a state agency, CARB regulates motor vehicles and fuels for their emissions.

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1 The *ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling* is codified in Title 13 of the California Code of Regulations, Chapter 10, Section 2485.

The *Air Toxics Control Plan* (March 2000, revised March 26, 2004) is a planning document designed to examine the overall direction of the SCAQMD's air toxics control program. It includes development and implementation of strategic initiatives to monitor and control air toxics emissions. Control strategies that are deemed viable and are within the SCAQMD's jurisdiction will each be brought to the SCAQMD Board for further consideration through the normal public review process. Strategies that are to be implemented by other agencies will be developed in a cooperative effort, and the progress will be periodically reported to the Board.

The SCAQMD has conducted an in-depth analysis of the toxic air contaminants and their resulting health risks for all of Southern California. This study, the *Multiple Air Toxics Exposure Study in the South Coast Air Basin, MATES IV,"* shows that cancer risk has decreased more than 50 percent between MATES III (2008) and MATES IV (2015).

MATES-IV is the most comprehensive dataset documenting the ambient air toxic levels and health risks associated with the Basin emissions. Therefore, MATES-IV study represents the baseline health risk for a cumulative analysis. MATES-IV estimates the average excess cancer risk level from exposure to TACs is less than 400 in one million basin-wide. These model estimates were based on monitoring data collected at 10 fixed sites within the Basin. 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 basin by modeling the specific grids. MATES-IV modeling predicted an excess cancer risk of 427 in one million for the Project area. DPM is included in this cancer risk along with all other TAC sources. DPM accounts for 68 percent of the total risk shown in MATES-IV.

2.3   Health Risk and Hazard Assessment

2.3.1   Thresholds of Significance

In order to determine whether or not a proposed project would cause a significant effect on the environment, the impact of the project must be determined by examining the types and levels of air toxics generated and the associated impacts on factors that affect air quality. While the final determination of significance thresholds is within the purview of the lead agency pursuant to the state CEQA Guidelines, the SCAQMD recommends that the following air pollution thresholds be used by lead agencies in determining whether the proposed Project is significant. If the lead agency finds that the proposed Project has the potential to exceed the air pollution thresholds, the Project should be considered significant. The thresholds for air toxic emissions are as follows.

- ■ Cancer Risk: Emit carcinogenic or toxic contaminants that exceed the maximum individual cancer risk of 10 in one million.

- ■ Non-Cancer Risk: Emit toxic contaminants that exceed the maximum hazard quotient of one in one million.

Cancer risk is expressed in terms of expected incremental incidence per million population. The SCAQMD has established an incidence rate of 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 10-in-one-million standard is a very health-protective significance threshold. A risk level of 10 in one million implies a likelihood that up to 10 persons 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. This risk would be an excess cancer that is in addition to any cancer risk borne by a person not exposed to these air toxics. To put this risk in perspective, 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 SCAQMD has also established non-carcinogenic risk parameters for use in HRAs. Noncarcinogenic 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.

2.3.2 Methodology

This HRA evaluates potential health risks associated with the emission of DPM resulting from the implementation of the Proposed Project. As previously described, CARB estimates that about 70 percent of the cancer risk that the average Californian faces from breathing toxic air pollutants stems from diesel exhaust particles.

The air dispersion modeling for the HRA was performed using the USEPA AERMOD dispersion model. AERMOD is a steady-state, multiple-source, Gaussian dispersion model designed for use with emission sources situated in terrain where ground elevations can exceed the stack heights of the emission sources (not a factor in this case). AERMOD requires hourly meteorological data consisting of wind vector, wind speed, temperature, stability class, and mixing height. Surface and upper air meteorological data provided by the SCAQMD for Azusa Meteorological Station was selected as being the most representative meteorology based on proximity to the Project site as well as being within the same SCAQMD source receptor area (SRA). The SCAQMD divides the Basin into 38 SRAs to forecast and report air quality. Both the Project site and the Azusa Meteorological Station are located in SCAQMD SRA 9, known as the East San Gabriel Valley.

Emissions sources in the model include two area sources to represent the loading docks located at two different locations on the Project site (see Figure 1). Additionally, emissions sources in the model include a volume line source (comprised of 42 volume sources) representing the onsite truck circulation at the Project site, and a volume line source (comprised of 28 volume sources) representing the offsite truck circulation extending approximately 1,500 feet to the west of the Project site along Los Angeles Street, as well as approximately 2,550 feet to the east of the Project site along Los Angeles Street. The separated line 2W volume source was employed consistent with the recommendations of the California Air Pollution Control Officers Association (CAPCOA) Health Risk Assessments for Proposed Land Use Projects (2009) document (page 54 of Attachment 1, *Technical Modeling Guidance*), which provides guidance for modeling roads/line sources in AERMOD. This guidance is necessary since AERMOD does not have a pollutant source option directly specific to mobile sources. According to CAPCOA, the best method for

modeling emissions from travelling truck vehicles in AERMOD is to use a series of multiple volume sources. 2W volume sources involves a series of volume sources to approximate a line source. Using the width of the road as the length of the side of a single volume source, the number of volume sources along the length of the road is determined by dividing the length of the road by 2W. The number of volume sources is then determined in order to replicate a mobile source of pollutants traveling a roadway within the AERMOD software. This methodology is consistent with the USEPA *AERMOD User's Guide*. AERMOD can be used to predict the concentrations of pollutants emitted from vehicles on roads. The maximum daily exhaust emissions for all diesel equipment was used to produce an emission rate in terms of grams per second per square meter. Emissions from heavy trucks were assigned a release height of 3.65 meters in order to provide a conservative analysis (i.e., using a higher release height would result in a smaller impact by allowing pollutants to disperse before they affect a receptor).

The estimated number of daily heavy-duty trucks was obtained from KOA (2019). It is noted that the SCAQMD Notice of Preparation comment letter recommends estimating the Project fleet mix based on 0.64 average daily heavy-duty truck trips per 1,000 square feet of proposed industrial warehouse building space. Employing this SCAQMD-recommended metric results in an estimate of 338 heavy-duty truck trips daily (0.64 x 528.710 = 338). However, this analysis is based on an estimate of 557 heavy-duty truck trips daily (349 three- and four-axle heavy-heavy-duty trucks and 208 two-axle medium-heavy-duty trucks) as provided by KOA, and thus is more conservative then recommended by the SCAQMD.

The model was run to obtain the peak 24-hour and annual average concentration in micrograms per cubic meter [$\mu g/m^3$] at nearby sensitive receptors. According to the SCAQMD's Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act (AB 2588), air dispersion modeling is required to estimate (a) annual average concentrations to calculate the Maximum Individual Cancer Risk, the maximum chronic hazard index, the zones of impact and (b) peak hourly concentrations to calculate the health impact from substances with acute non-cancer health effects. To achieve these goals, the receptor grid should extend to cover the zone of impact. To achieve these goals, the receptor grid in the model begins at the facility fence line and extends to cover the zone of impact, which is the residential community (consisting of several schools) to the east. Per SCAQMD recommendations, in order "to identify the maximum impacted receptors (i.e., peak cancer risk and peak hazard indices) a grid spacing of 75 meters is used" (SCAQMD recommends that a receptor grid be spaced at 75 meters when analyzing the effects of a facility spanning 25 to 100 acres). The analysis does not miss potential peak concentration levels at any sensitive receptors as the potential peak concentration levels at sensitive receptors are identified through the examination of pollutant concentration contour mapping. Where multiple concentration levels are identified within a single receptor grid, the highest concentration level identified is used for the purpose of determining the health risk within that receptor grid.

Note that the concentration estimates developed using this methodology are considered conservative and are not a specific prediction of the actual concentrations that would occur as a result of the Project at any one point in time. Actual 24-hour and annual average and concentrations are dependent on many variables, particularly the number and type of equipment working at specific distances during time periods of adverse meteorology.

A health risk computation was performed to determine the risk of developing an excess cancer risk calculated on a 70-year lifetime basis, 30-year, and 9-year exposure scenarios. The chronic and carcinogenic health risk calculations are based on the standardized equations contained in the OEHHA Guidance Manual (2015). Only the risk associated with operations of the Proposed Project was assessed as risk associated with Project construction emissions are analyzed in the Project *Air Quality and Greenhouse Gas Assessment* prepared by ECORP.

Based on the OEHHA methodology, the residential inhalation cancer risk from the annual average DPM concentrations are calculated by multiplying the daily inhalation or oral dose, by a cancer potency factor, the age sensitivity factor (ASF), the frequency of time spent at home, and the exposure duration divided by averaging time, to yield the excess cancer risk. These factors are discussed in more detail below. It is important to note that exposure duration is based on continual heavy truck operations at the Project site. Cancer risk must be calculated separately for specified age groups, because of age differences in sensitivity to carcinogens and age differences in intake rates (per kilogram [kg] body weight). Separate risk estimates for these age groups provide a health-protective estimate of cancer risk by accounting for greater susceptibility in early life, including both age-related sensitivity and amount of exposure.

Exposure through inhalation ($Dose_{air}$) are a function of the breathing rate, the exposure frequency, and the concentration of a substance in the air. For residential exposure, the breathing rates are determined for specific age groups, so $Dose_{air}$ is calculated for each of these age groups, third trimester, 0<2, 2<9, 2<16, 16<30 and 16-70 years. To estimate cancer risk, the dose was estimated by applying the following formula to each ground-level concentration:

$$\textbf{Dose}_{\textbf{air}} = (\textbf{C}_{\textbf{air}} * \{\textbf{BR/BW}\} * \textbf{A} * \textbf{EF} * \textbf{10}^{\textbf{-6}})$$

Where:

$Dose_{air}$	=	dose through inhalation (mg/kg/day)
C_{air}	=	air concentration (µg/m^3) from air dispersion model
{BR/BW}	=	daily breathing rate normalized to body weight (L/kg body weight – day) (225 L\kg BW-day for 3rd Trimester, 658 L/kg BW-day for 0<2 years, 535 L/kg BW-day for 2<9 years, 452 L/kg BW-day for 2<16 years, 210 L/kg BW-day for 16<30 years, and 185 L/kg BW-day 16<70 years)
A	=	Inhalation absorption factor (unitless [1])
EF	=	exposure frequency (unitless), days/365 days (0.96 [approximately 350 days per year])
10^{-6}	=	conversion factor (micrograms to milligrams, liters to cubic meters)

OEHHA developed ASFs to take into account the increased sensitivity to carcinogens during early-in-life exposure. In the absence of chemical-specific data, OEHHA recommends a default ASF of 10 for the third trimester to age two years, an ASF of 3 for ages two through 15 years to account for potential increased sensitivity to carcinogens during childhood, and an ASF of one for ages 16 through 70 years.

Fraction of time at home (FAH) during the day is used to adjust exposure duration and cancer risk from a specific facility's emissions, based on the assumption that exposure to the facility's emissions are not occurring away from home. OEHHA recommends the following FAH values: from the third trimester to

age <2 years, 85 percent of time is spent at home; from age two through <16 years, 72 percent of time is spent at home; from age 16 years and greater, 73 percent of time is spent at home.

To estimate the cancer risk, the dose is multiplied by the cancer potency factor, the ASF, the exposure duration divided by averaging time, and the frequency of time spent at home (for residents only):

$$\text{Risk}_{\text{inh-res}} = (\text{Dose}_{\text{air}} * CPH * ASF * ED/AT * FAH)$$

Where:

$\text{Risk}_{\text{inh-res}}$	=	residential inhalation cancer risk (potential chances per million)
Dose_{air}	=	daily dose through inhalation (mg/kg-day)
CPF	=	inhalation cancer potency factor $(mg/kg\text{-}day^{-1})$
ASF	=	age sensitivity factor for a specified age group (unitless)
ED	=	exposure duration (in years) for a specified age group (0.25 years for 3rd trimester, 2 years for 0<2, 7 years for 2<9, 14 years for 2<16, 14 years for 16<30, 54 years for 16-70)
AT	=	averaging time of lifetime cancer risk (years)
FAH	=	fraction of time spent at home (unitless)

Chronic Non-Cancer Hazard

Non-cancer chronic impacts are calculated by dividing the annual average concentration by the REL for that substance. The REL is defined as the concentration at which no adverse non-cancer health effects are anticipated. The following equation was used to determine the non-cancer risk:

$$\text{Hazard Quotient} = C_i/REL_i$$

Where:

C_i	=	Concentration in the air of substance i (annual average concentration in $\mu g/m^3$)
REL_i	=	Chronic noncancer Reference Exposure Level for substance i $(\mu g/m^3)$

Acute Non-Cancer Hazard

The potential for acute non-cancer hazards is evaluated by comparing the maximum short-term exposure level to an acute REL. RELs are designed to protect sensitive individuals within the population. The calculation of acute non-cancer impacts is similar to the procedure for chronic non-cancer impacts. The equation is as follows:

$$\text{Acute HQ} = \text{Maximum Hourly Air Concentration } (\mu g/m^3) / \text{Acute REL } (\mu g/m^3)$$

2.3.3   Impact Analysis

Project Risk and Hazard Assessment

CARB identified DPM as a TAC in 1998. Mobile sources (including trucks, buses, automobiles, trains, ships, and farm equipment) are by far the largest source of diesel emissions. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Diesel

exhaust is composed of two phases, either gas or particulate; both contribute to the risk. The gas phase is composed of many of the urban HAPs, such as acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde, and polycyclic aromatic hydrocarbons. The particulate phase has many different types that can be classified by size or composition. The sizes of diesel particulates of greatest health concern are fine and ultrafine particles. These particles may be composed of elemental carbon with adsorbed[2] compounds such as organics, sulfates, nitrates, metals, and other trace elements. Diesel exhaust is emitted from a broad range of on- and off-road diesel engines. As the Project would accommodate daily visits from heavy-duty diesel trucks during operations, an analysis of DPM was performed using the USEPA-approved AERMOD model.

Non-Carcinogenic Hazards

The significance thresholds for TAC exposure requires an evaluation of non-cancer risk stated in terms of a hazard index. Non-cancer chronic impacts are calculated by dividing the annual average concentration by the REL for that substance. The potential for acute non-cancer hazards is evaluated by comparing the maximum short-term exposure level to an acute REL. RELs are designed to protect sensitive individuals within the population. The calculation of acute non-cancer impacts is similar to the procedure for chronic non-cancer impacts.

An acute or chronic hazard index of 1.0 is considered individually significant. The hazard index is calculated by dividing the acute or chronic exposure by the reference exposure level. The highest maximum chronic and acute hazard index at a sensitive receptor associated with DPM emissions from the Project would be 0.0013 and 0.0347, respectively. This concentration would occur at the residential neighborhood located east of the Project site, specifically at the western cul-de-sac of Benbow Street. Therefore, non-carcinogenic hazards are calculated to be within acceptable limits.

Carcinogenic Risk

Vehicle DPM emissions were estimated using emission factors for course particulate matter less than 10 microns in diameter (PM_{10}) generated with the 2017 version of the EMission FACtor model (EMFAC) developed by CARB. EMFAC 2017 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 CARB to project changes in future emissions from on-road mobile sources. The most recent version of this model, EMFAC 2017, incorporates regional motor vehicle data, information and estimates regarding the distribution of vehicle miles traveled by speed, and number of starts per day. The most important improvement in EMFAC 2017 is the integration of the new data and methods to estimate emissions from diesel trucks and buses. The model includes the emissions benefits of the truck and bus rule and the previously adopted rules for other on-road diesel equipment.

For this Project, annual average PM_{10} emission factors were generated by running EMFAC 2017 for vehicles in the Basin within Los Angeles County. EMFAC generates emission factors in terms of grams of

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[2]This term is specifically used for gases.

pollutant emitted per vehicle activity and can calculate a matrix of emission factors at specific values of vehicle speed, temperature, and relative humidity. The model was run for speeds traveled on and within the vicinity of the Project site. The vehicle travel speeds for each segment modeled are summarized below.

- Idling (15 minutes per truck) – onsite loading/unloading; and

- five miles per hour – onsite vehicle movement including driving and maneuvering; and

- 35 miles per hour – offsite vehicle movement including driving and maneuvering.

The average PM_{10} emission factors for heavy trucks were calculated based on the annual average emission factors for various exposure periods associated with assumptions for evaluating exposure over three different periods (i.e., 70-, 30-, and 9-year exposure scenarios). The posted speed limit on Los Angeles Street is 40 miles per hour. The average PM_{10} emission factor for heavy trucks traveling 35 miles per hour is greater than those traveling 40 miles per hour. Thus, the use of an emissions factor for trucks traveling 35 miles per hour is conservative.

Based on the AERMOD outputs, the expected annual average diesel PM_{10} emission concentrations at the most exposed sensitive receptor (located at the western cul-de-sac of Benbow Street) resulting from operation of the Project (557 daily heavy-duty truck trips) would be 0.007 $\mu g/m^3$ at the greatest.

Cancer risk calculations for residences are based on 70-, 30-, and 9-year exposure periods while schools are based on a 9-year exposure period. The calculated carcinogenic risk at the sensitive receptor as a result of the Project is depicted in Table 2. As shown, impacts related to cancer risk from heavy trucks would be less than significant at the nearest residences and nearest school.

Table 2. Maximum Operational Health Risk at the Project Vicinity Residential Neighborhoods			
Exposure Scenario	**Maximum Cancer Risk (Risk per Million)**	**Significance Threshold (Risk per Million)**	**Exceeds SCAQMD Significance Threshold?**
Residences to the East with Highest Pollutant Concentrations			
70-Year Exposure	3.24	*10*	No
30-Year Exposure	2.73	*10*	No
9-Year Exposure	1.96	*10*	No
Walnut Elementary School to the Northeast			
9-Year Exposure	1.02	*10*	**No**

Source: Refer to **Attachment A** for Model Data Outputs.
Notes: The elementary school is only analyzed for nine years of exposure as students are not expected to attend school beyond those years.

In conclusion, non-carcinogenic hazards resulting from the proposed Project are calculated to be within acceptable limits. Additionally, impacts related to cancer risk from heavy trucks would be less than significant at the nearest residences and nearest school. Therefore, impacts related to health risk from the Project would be less than significant.

3.0　REFERENCES

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Health Risk Calculations and AERMOD Outputs

Irwindale Industrial Project

DPM Emissions Calculations

On-Site Truck Movement			Avg Speed (mph)	Emission Factor (g/mi)	Daily Truck Trips (round trips)	length (mi)	g/day	g/sec		# sources	EVS
Project Trucks			5	0.063650	557	0.8	2.84E+01	3.28E-04		42	7.82E-06
											7.82E-06

Off-Site Truck Movement			Avg Speed (mph)	Emission Factor (g/mi)	Daily Truck Trips (round trips)	length (mi)	g/day	g/sec			
Project Trucks			35	0.015929	557	0.8	7.10E+00	8.22E-05		28	2.93E-06
											2.93E-06

On-Site Vehicle Idle Emissions		Emission Factor (g/veh/day)	Idling Time (min)	Idling Time (hrs/day)	Daily Trucks	Release Height Above Ground (m)	g/day	g/sec			
Project Trucks		0.004595	15	1.04E-02	279	3.65	1.34E-02	1.55E-07		4	3.86E-08

Sources:

EMFAC2017. PM10 Emission Factors are derived from the Year 2021 Heavy-Duty Truck Fleet Mix

Notes:

The Project will accommodate 557 inbound and outbound truck trips daily. Thus each visting truck results in 2 trips, equating to 279 idling events daily.

Risk Calculations

1 Hour Avg Concentration:	0.063
24 Hour Avg Concentration:	0.019
Annual Avg Concentration:	0.007

Cancer Risk

	3rd trimester	0<2 years	2<9 years	2<16 years	16<30 years	16<70 years
DOSEair = (Cair*(BR/BW)*A*EF*10^{-6})	1.42397E-06	4.16433E-06	3.38589E-06	2.8606E-06	1.32904E-06	1.1708E-06
Risk = DOSEair * CPF * ASF * ED/AT * FAH	4.75505E-08	1.11247E-06	8.04488E-07	1.35936E-06	2.134440E-07	7.2527E-07

		Risk	in one million
Cancer Risk:	70-year exposure	3.24E-06	**3.24**
	30-year exposure	2.73E-06	**2.73**
	9-year exposure	1.96E-06	**1.96**
Threshold:			10 in one million

	DOSEair		mg/kg-d	Dose through inhalation
	CPF	1.1	$(mg/kg/day)^{-1}$	Cancer Potency Factor for DPM
BR/BW	BR/BW (3rd trimester)	225	L/kg	Daily Breathing rate normalized to body weight
	BR/BW (0 < 2 years)	658	bodyweight-	
	BR/BW (2 < 9 years)	535	day	
	BR/BW (2 < 16 years)	452		
	BR/BW (16 < 30 years)	210		
	BR/BW (16 < 70 years)	185		
	10^{-6}	1.00E-06		Micrograms to milligrams conversions, liters to cubic meters conversion
	Cair	0.0066	ug/m^3	Concentration in air (ug/m^3), modeled annual average concentration
	A	1		Inhalation absorption factor
	EF	0.96	days/year	Exposure frequency (days/year)
ED	ED (3rd trimester)	0.25	years	Exposure duration (years)
	ED (0 < 2 years)	2		
	ED (2 < 9 years)	7		
	ED (2 < 16, 16 < 30 years)	14		
	ED (16 - 70 years)	54		
	AT	70	years	Averaging time period over which exposure is averaged
ASF	ASF (3rd trimester - 2 years)	10		Age Sensitivity Factor
	ASF (2 - 16 years)	3		
	ASF (16 - 70 years)	1		
FAH	FAH (3rd trimester - 2 years)	0.85		Fraction of time spent at home (unitless)
	FAH (2 - 16 years)	0.72		
	FAH (16 - 70 years)	0.73		

Chronic Noncancer Hazard

Threshold: 1

Hazard Quotient = C_i/REL_i

HQ = **1.32E-03**

C_i	6.60E-03	Concentration (annual average)
REL_i	5	Reference Exposure Level

Acute NonCancer Hazard

Threshold: 1

Acute HQ = Maximum Hourly Concentration/Acute REL

Acute HQ = **3.47E-02**

Max Hourly	6.60E-03
Acute REL (Acrolein)	0.19

Risk Calculations

1 Hour Avg Concentration:	0.029
24 Hour Avg Concentration:	0.010
Annual Avg Concentration:	0.003

Cancer Risk

	3rd trimester	0<2 years	2<9 years	2<16 years	16<30 years	16<70 years
DOSEair = (Cair*(BR/BW)*A*EF*10^{-6})	5.82534E-07	1.70359E-06	1.38514E-06	1.17025E-06	5.43699E-07	4.7897E-07

	3rd trimester	0<2 years	2<9 years	2<16 years	16<30 years	16<70 years
Risk = DOSEair * CPF * ASF * ED/AT * FAH	2.28853E-08	5.35414E-07	4.57095E-07	7.72363E-07	1.196137E-07	4.0644E-07

		Risk	in one million
Cancer Risk:			
	9-year exposure	1.02E-06	**1.02**
Threshold:			10 in one million

	DOSEair		mg/kg-d	Dose through inhalation
	CPF	1.1	(mg/kg/day)$^{-1}$	Cancer Potency Factor for DPM
BR/BW	BR/BW (3rd trimester)	225	L/kg bodyweight-day	Daily Breathing rate normalized to body weight
	BR/BW (0 < 2 years)	658		
	BR/BW (2 < 9 years)	535		
	BR/BW (2 < 16 years)	452		
	BR/BW (16 < 30 years)	210		
	BR/BW (16 < 70 years)	185		
	10^{-6}	1.00E-06		Micrograms to milligrams conversions, liters to cubic meters conversion
	Cair	0.0027	ug/m^3	Concentration in air (ug/m^3), modeled annual average concentration
	A	1		Inhalation absorption factor
	EF	0.96	days/year	Exposure frequency (days/year)
ED	ED (3rd trimester)	0.25	years	Exposure duration (years)
	ED (0 < 2 years)	2		
	ED (2 < 9 years)	7		
	ED (2 < 16, 16 < 30 years)	14		
	ED (16 - 70 years)	54		
	AT	70	years	Averaging time period over which exposure is averaged
ASF	ASF (3rd trimester - 2 years)	10		Age Sensitivity Factor
	ASF (2 - 16 years)	3		
	ASF (16 - 70 years)	1		
FAH	FAH (3rd trimester - 2 years)	1		Fraction of time spent at home (unitless)
	FAH (2 - 16 years)	1		
	FAH (16 - 70 years)	1		

Chronic Noncancer Hazard
Threshold: 1

Hazard Quotient = C_i/REL_i

HQ = **5.40E-04**

C_i	2.70E-03	Concentration (annual average)
REL_i	5	Reference Exposure Level

Acute NonCancer Hazard
Threshold: 1

Acute HQ = Maximum Hourly Concentration/Acute REL

Acute HQ = **1.42E-02**

Max Hourly	2.70E-03
Acute REL (Acrolein)	0.19
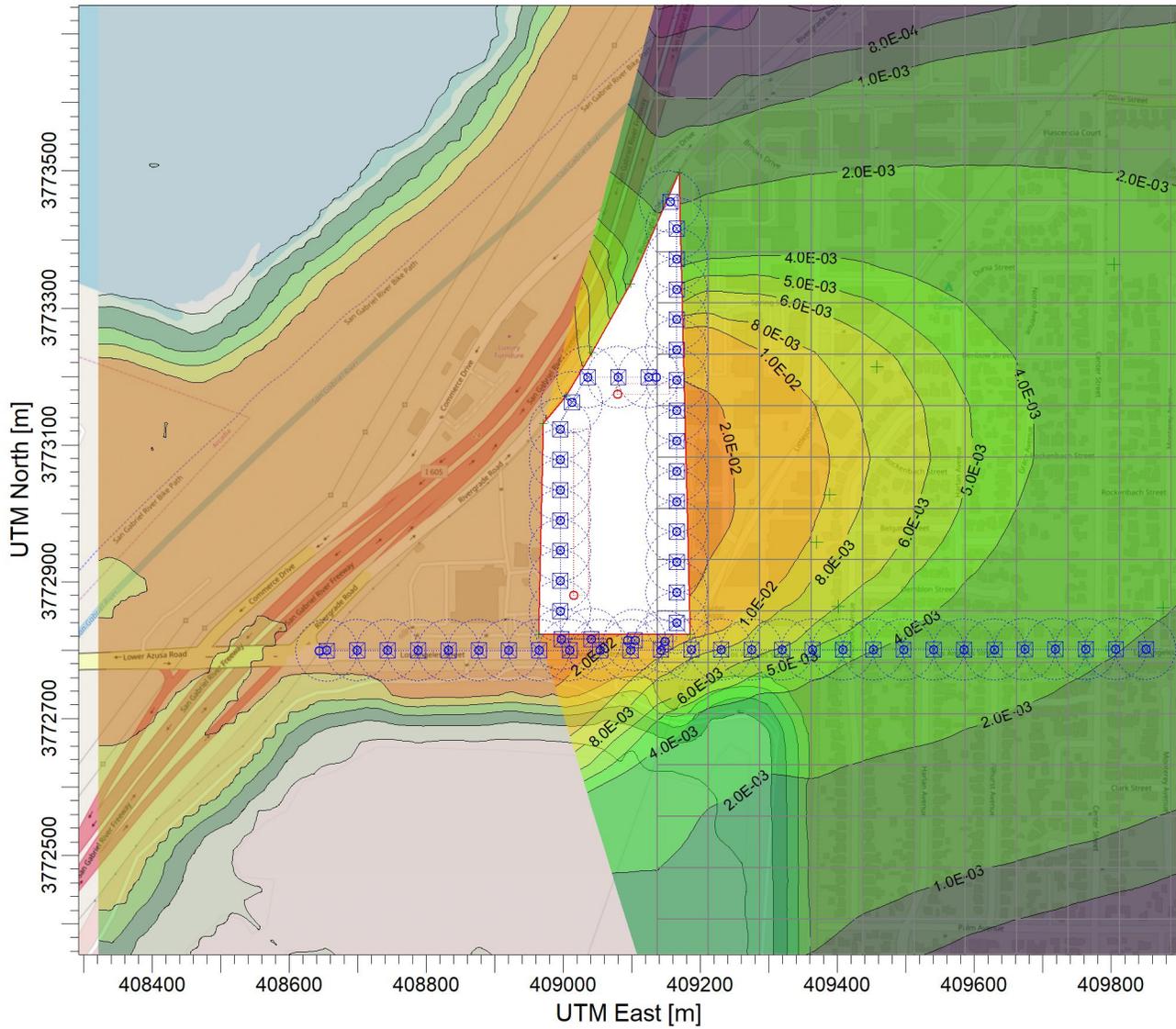
PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL   ug/m^3

Max: 4.8E-02 [ug/m^3] at (409137.19, 3773157.01)

4.8E-04 5.0E-04 6.0E-04 8.0E-04 1.0E-03 2.0E-03 4.0E-03 5.0E-03 6.0E-03 8.0E-03 1.0E-02 2.0E-02 4.0E-02 4.8E-02

COMMENTS:	SOURCES:	COMPANY NAME:	
	5		
	RECEPTORS:	MODELER:	
	265		
	OUTPUT TYPE:	SCALE: 1:10,091	
	Concentration	0 ▭▬▭ 0.3 km	
	MAX:	DATE:	PROJECT NO.:
	4.8E-02 ug/m^3	**11/22/2019**	

Control Pathway

AERMOD

Dispersion Options

Titles

C:\Lakes\AERMOD View\Irwindale Industrial\Irwindale Industrial.isc

Dispersion Options

- [■] Regulatory Default
- [ ] Non-Default Options

Dispersion Coefficient

Urban

Population:
Name (Optional):
Roughness Length:
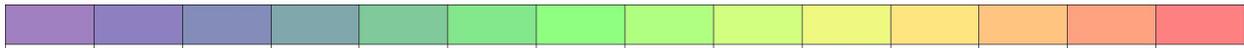
Output Type

- [■] Concentration
- [ ] Total Deposition (Dry & Wet)
- [ ] Dry Deposition
- [ ] Wet Deposition

Plume Depletion

- [ ] Dry Removal
- [ ] Wet Removal

Output Warnings

- [ ] No Output Warnings
- [ ] Non-fatal Warnings for Non-sequential Met Data

Pollutant / Averaging Time / Terrain Options

Pollutant Type

PM10

Averaging Time Options

Hours

[■]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[■]
1	2	3	4	6	8	12	24

- [ ] Month
- [ ] Period
- [■] Annual

Exponential Decay

Half-life of 4 hrs will be used

Terrain Height Options

- [ ] Flat
- [■] Elevated

SO: Meters
RE: Meters
TG: Meters

Flagpole Receptors

- [ ] Yes
- [■] No

Default Height = 0.00 m

Project File: C:\Lakes\AERMOD View\Irwindale Industrial\Irwindale Industrial.isc
AERMOD View by Lakes Environmental Software   CO - 1   11/21/2019

Control Pathway

Optional Files

☐ Re-Start File   ☐ Init File   ☐ Multi-Year Analyses   ☐ Event Input File   ☑ Error Listing File

Detailed Error Listing File

Filename: Irwindale Industrial.err

Source Pathway - Source Inputs

Area Sources

Source Type	Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation (Optional)	Release Height [m]	Emission Rate [g/ (s-m^2)]	Length of X Side [m]	Length of Y Side [m]	Orientation Angle from North [deg]	Initial Vertical Dim. [m]
AREA	AREA1	409079.00	3773174.00	108.06	3.68	3.86E-8	76.20	15.00	0.00	
		Loading Dock 1								
AREA	AREA2	409015.00	3772880.00	106.56	3.68	1.16E-7	22.86	243.84	0.00	
		Loading Dock 2								

Source Pathway - Source Inputs

Line Volume Sources

Source Type: LINE VOLUME

Source: SLINE2 (onsite circulation)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
22.15	7.82E-6		409093.52	3772814.46	105.58	3.65
			409165.57	3772812.46	105.40	3.65
			409165.57	3773448.92	110.05	3.65
			409153.56	3773456.93	109.94	3.65

Source Type: LINE VOLUME

Source: SLINE3 (onsite circulation)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
22.15	7.82E-6		409135.55	3773198.74	108.64	3.65
			409033.47	3773198.74	108.73	3.65
			408995.45	3773132.69	107.95	3.65
			408995.45	3772822.46	105.69	3.65
			408993.45	3772816.46	105.51	3.65
			409061.50	3772816.46	105.59	3.65

Source Type: LINE VOLUME

Source: SLINE4 (Offsite circulation)

Length of Side [m]	Emission Rate [g/ s]	Building Height [m]	X Coordinate for Points [m]	Y Coordinate for points [m]	Base Elevation [m]	Release Height [m]
22.15	2.93E-6		408643.97	3772799.39	105.50	3.65
			409875.92	3772801.46	109.38	3.65

Source Pathway - Source Inputs

Volume Sources Generated from Line Sources

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE2	L0000085	409104.59	3772814.15	105.58	3.65	4.60E-7	22.15		20.60	2.37
	L0000086	409148.87	3772812.92	105.49	3.65	4.60E-7	22.15		20.60	2.37
	L0000087	409165.57	3772840.05	106.12	3.65	4.60E-7	22.15		20.60	2.37
	L0000088	409165.57	3772884.35	107.22	3.65	4.60E-7	22.15		20.60	2.37
	L0000089	409165.57	3772928.65	107.27	3.65	4.60E-7	22.15		20.60	2.37
	L0000090	409165.57	3772972.95	107.37	3.65	4.60E-7	22.15		20.60	2.37
	L0000091	409165.57	3773017.25	107.58	3.65	4.60E-7	22.15		20.60	2.37
	L0000092	409165.57	3773061.55	107.70	3.65	4.60E-7	22.15		20.60	2.37
	L0000093	409165.57	3773105.85	107.84	3.65	4.60E-7	22.15		20.60	2.37
	L0000094	409165.57	3773150.15	108.20	3.65	4.60E-7	22.15		20.60	2.37
	L0000095	409165.57	3773194.45	108.94	3.65	4.60E-7	22.15		20.60	2.37
	L0000096	409165.57	3773238.75	109.62	3.65	4.60E-7	22.15		20.60	2.37
	L0000097	409165.57	3773283.05	109.67	3.65	4.60E-7	22.15		20.60	2.37
	L0000098	409165.57	3773327.35	109.72	3.65	4.60E-7	22.15		20.60	2.37
	L0000099	409165.57	3773371.65	109.75	3.65	4.60E-7	22.15		20.60	2.37
	L0000100	409165.57	3773415.95	109.98	3.65	4.60E-7	22.15		20.60	2.37
	L0000101	409156.15	3773455.21	110.03	3.65	4.60E-7	22.15		20.60	2.37

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE3	L0000102	409124.47	3773198.74	108.64	3.65	6.02E-7	22.15		20.60	2.37
	L0000103	409080.17	3773198.74	109.07	3.65	6.02E-7	22.15		20.60	2.37
	L0000104	409035.87	3773198.74	108.72	3.65	6.02E-7	22.15		20.60	2.37
	L0000105	409012.57	3773162.43	108.52	3.65	6.02E-7	22.15		20.60	2.37
	L0000106	408995.45	3773122.70	107.90	3.65	6.02E-7	22.15		20.60	2.37

Source Pathway - Source Inputs

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE3	L0000107	408995.45	3773078.40	107.39	3.65	6.02E-7	22.15		20.60	2.37
	L0000108	408995.45	3773034.10	107.17	3.65	6.02E-7	22.15		20.60	2.37
	L0000109	408995.45	3772989.80	106.92	3.65	6.02E-7	22.15		20.60	2.37
	L0000110	408995.45	3772945.50	106.54	3.65	6.02E-7	22.15		20.60	2.37
	L0000111	408995.45	3772901.20	106.47	3.65	6.02E-7	22.15		20.60	2.37
	L0000112	408995.45	3772856.90	106.23	3.65	6.02E-7	22.15		20.60	2.37
	L0000113	408996.97	3772816.46	105.58	3.65	6.02E-7	22.15		20.60	2.37
	L0000114	409041.27	3772816.46	106.38	3.65	6.02E-7	22.15		20.60	2.37

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE4	L0000115	408655.04	3772799.41	105.43	3.65	1.05E-7	22.15		20.60	2.37
	L0000116	408699.34	3772799.49	105.18	3.65	1.05E-7	22.15		20.60	2.37
	L0000117	408743.64	3772799.56	105.04	3.65	1.05E-7	22.15		20.60	2.37
	L0000118	408787.94	3772799.64	105.06	3.65	1.05E-7	22.15		20.60	2.37
	L0000119	408832.24	3772799.71	105.21	3.65	1.05E-7	22.15		20.60	2.37
	L0000120	408876.54	3772799.78	105.26	3.65	1.05E-7	22.15		20.60	2.37
	L0000121	408920.84	3772799.86	105.32	3.65	1.05E-7	22.15		20.60	2.37
	L0000122	408965.14	3772799.93	105.46	3.65	1.05E-7	22.15		20.60	2.37
	L0000123	409009.44	3772800.01	105.48	3.65	1.05E-7	22.15		20.60	2.37
	L0000124	409053.74	3772800.08	105.34	3.65	1.05E-7	22.15		20.60	2.37
	L0000125	409098.04	3772800.15	104.67	3.65	1.05E-7	22.15		20.60	2.37
	L0000126	409142.34	3772800.23	104.62	3.65	1.05E-7	22.15		20.60	2.37
	L0000127	409186.64	3772800.30	104.90	3.65	1.05E-7	22.15		20.60	2.37
	L0000128	409230.94	3772800.38	105.92	3.65	1.05E-7	22.15		20.60	2.37
	L0000129	409275.24	3772800.45	106.93	3.65	1.05E-7	22.15		20.60	2.37

Source Pathway - Source Inputs

Line Source ID	Volume Source ID	X Coordinate [m]	Y Coordinate [m]	Base Elevation [m]	Release Height [m[	Emission Rate [g/s]	Length of Side [m]	Building Height [m]	Initial Lateral Dimencion [m]	Initial Vertical Dimencion [m]
SLINE4	L0000130	409319.54	3772800.53	107.22	3.65	1.05E-7	22.15		20.60	2.37
	L0000131	409363.84	3772800.60	107.30	3.65	1.05E-7	22.15		20.60	2.37
	L0000132	409408.14	3772800.67	107.42	3.65	1.05E-7	22.15		20.60	2.37
	L0000133	409452.44	3772800.75	107.55	3.65	1.05E-7	22.15		20.60	2.37
	L0000134	409496.74	3772800.82	107.71	3.65	1.05E-7	22.15		20.60	2.37
	L0000135	409541.04	3772800.90	107.99	3.65	1.05E-7	22.15		20.60	2.37
	L0000136	409585.34	3772800.97	108.36	3.65	1.05E-7	22.15		20.60	2.37
	L0000137	409629.64	3772801.05	108.60	3.65	1.05E-7	22.15		20.60	2.37
	L0000138	409673.94	3772801.12	108.74	3.65	1.05E-7	22.15		20.60	2.37
	L0000139	409718.24	3772801.19	108.91	3.65	1.05E-7	22.15		20.60	2.37
	L0000140	409762.54	3772801.27	109.02	3.65	1.05E-7	22.15		20.60	2.37
	L0000141	409806.84	3772801.34	109.16	3.65	1.05E-7	22.15		20.60	2.37
	L0000142	409851.14	3772801.42	109.32	3.65	1.05E-7	22.15		20.60	2.37

Receptor Pathway

Receptor Networks

Note: Terrain Elevations and Flagpole Heights for Network Grids are in Page RE2 - 1 (If applicable)
Generated Discrete Receptors for Multi-Tier (Risk) Grid and Receptor Locations for Fenceline Grid are in Page RE3 - 1 (If applicable)

Uniform Cartesian Grid

Receptor Network ID	Grid Origin X Coordinate [m]	Grid Origin Y Coordinate [m]	No. of X-Axis Receptors	No. of Y-Axis Receptors	Spacing for X-Axis [m]	Spacing for Y-Axis [m]
UCART1	409137.19	3772257.01	12	21	75.00	75.00

Discrete Receptors

Discrete Cartesian Receptors

Record Number	X-Coordinate [m]	Y-Coordinate [m]	Group Name (Optional)	Terrain Elevations	Flagpole Heights [m] (Optional)
1	409401.47	3772863.91		107.99	
2	409875.62	3772861.91		109.93	
3	409457.48	3773214.03		110.17	
4	409803.60	3773364.08		112.42	

Plant Boundary Receptors

Cartesian Plant Boundary

Primary

Record Number	X-Coordinate [m]	Y-Coordinate [m]	Group Name (Optional)	Terrain Elevations	Flagpole Heights [m] (Optional)
1	409185.40	3772822.72	FENCEPRI	105.12	
2	409168.92	3773498.24	FENCEPRI	110.54	
3	409098.31	3773335.83	FENCEPRI	108.78	
4	409041.82	3773234.62	FENCEPRI	108.26	
5	409004.16	3773171.07	FENCEPRI	108.05	
6	408971.21	3773131.06	FENCEPRI	107.62	
7	408964.15	3772822.72	FENCEPRI	105.58	

Receptor Groups

Record Number	Group ID	Group Description
1	FENCEPRI	Cartesian plant boundary Primary Receptors

Terrain Elevations and Flagpole Heights for Network Grids

Uniform Cartesian Grid

Receptor Network ID	Location: X-Coordinate [m]	Location: Y-Coordinate [m]	Terrain Elevations (Optional)	Flagpole Heights (Optional)
UCART1	409137.19	3772257.01	55.30	Option not Selected
	409212.19	3772257.01	54.10	
	409287.19	3772257.01	66.40	
	409362.19	3772257.01	103.90	
	409437.19	3772257.01	105.70	
	409512.19	3772257.01	106.20	
	409587.19	3772257.01	106.20	
	409662.19	3772257.01	106.70	
	409737.19	3772257.01	107.10	
	409812.19	3772257.01	107.50	
	409887.19	3772257.01	107.60	
	409962.19	3772257.01	108.40	
	409137.19	3772332.01	53.80	
	409212.19	3772332.01	53.80	
	409287.19	3772332.01	63.20	
	409362.19	3772332.01	103.50	
	409437.19	3772332.01	105.70	
	409512.19	3772332.01	106.30	
	409587.19	3772332.01	106.70	
	409662.19	3772332.01	106.80	
	409737.19	3772332.01	107.20	
	409812.19	3772332.01	107.60	
	409887.19	3772332.01	108.10	
	409962.19	3772332.01	108.50	
	409137.19	3772407.01	54.00	
	409212.19	3772407.01	55.10	
	409287.19	3772407.01	65.60	
	409362.19	3772407.01	102.50	
	409437.19	3772407.01	105.50	
	409512.19	3772407.01	106.00	
	409587.19	3772407.01	106.90	
	409662.19	3772407.01	107.20	
	409737.19	3772407.01	107.70	
	409812.19	3772407.01	107.90	
	409887.19	3772407.01	108.40	
	409962.19	3772407.01	108.90	
	409137.19	3772482.01	56.00	
	409212.19	3772482.01	55.30	
	409287.19	3772482.01	65.10	
	409362.19	3772482.01	103.00	
	409437.19	3772482.01	105.70	
	409512.19	3772482.01	106.60	
	409587.19	3772482.01	107.30	
	409662.19	3772482.01	107.40	
	409737.19	3772482.01	107.90	

Receptor Pathway

Receptor Network ID	Location: X-Coordinate [m]	Location: Y-Coordinate [m]	Terrain Elevations (Optional)	Flagpole Heights (Optional)
UCART1	409812.19	3772482.01	108.20	Option not Selected
	409887.19	3772482.01	109.00	
	409962.19	3772482.01	109.50	
	409137.19	3772557.01	53.80	
	409212.19	3772557.01	54.60	
	409287.19	3772557.01	65.40	
	409362.19	3772557.01	103.40	
	409437.19	3772557.01	106.00	
	409512.19	3772557.01	106.80	
	409587.19	3772557.01	107.50	
	409662.19	3772557.01	107.90	
	409737.19	3772557.01	108.00	
	409812.19	3772557.01	108.30	
	409887.19	3772557.01	108.70	
	409962.19	3772557.01	109.10	
	409137.19	3772632.01	62.00	
	409212.19	3772632.01	65.80	
	409287.19	3772632.01	65.70	
	409362.19	3772632.01	103.50	
	409437.19	3772632.01	106.20	
	409512.19	3772632.01	107.00	
	409587.19	3772632.01	107.80	
	409662.19	3772632.01	108.10	
	409737.19	3772632.01	109.40	
	409812.19	3772632.01	108.90	
	409887.19	3772632.01	109.20	
	409962.19	3772632.01	109.40	
	409137.19	3772707.01	90.60	
	409212.19	3772707.01	77.50	
	409287.19	3772707.01	72.80	
	409362.19	3772707.01	107.00	
	409437.19	3772707.01	107.10	
	409512.19	3772707.01	107.20	
	409587.19	3772707.01	108.00	
	409662.19	3772707.01	108.50	
	409737.19	3772707.01	109.60	
	409812.19	3772707.01	109.30	
	409887.19	3772707.01	109.50	
	409962.19	3772707.01	109.90	
	409137.19	3772782.01	104.80	
	409212.19	3772782.01	105.50	
	409287.19	3772782.01	107.00	
	409362.19	3772782.01	107.40	
	409437.19	3772782.01	107.70	
	409512.19	3772782.01	107.90	
	409587.19	3772782.01	108.50	
	409662.19	3772782.01	108.80	
	409737.19	3772782.01	109.00	

Receptor Pathway

Receptor Network ID	Location: X-Coordinate [m]	Location: Y-Coordinate [m]	Terrain Elevations (Optional)	Flagpole Heights (Optional)
UCART1	409812.19	3772782.01	109.30	Option not Selected
	409887.19	3772782.01	109.60	
	409962.19	3772782.01	110.20	
	409137.19	3772857.01	106.70	
	409212.19	3772857.01	106.20	
	409287.19	3772857.01	107.30	
	409362.19	3772857.01	107.60	
	409437.19	3772857.01	108.00	
	409512.19	3772857.01	108.20	
	409587.19	3772857.01	108.70	
	409662.19	3772857.01	108.90	
	409737.19	3772857.01	109.30	
	409812.19	3772857.01	109.80	
	409887.19	3772857.01	110.10	
	409962.19	3772857.01	110.50	
	409137.19	3772932.01	107.10	
	409212.19	3772932.01	107.40	
	409287.19	3772932.01	107.50	
	409362.19	3772932.01	107.80	
	409437.19	3772932.01	108.10	
	409512.19	3772932.01	108.70	
	409587.19	3772932.01	108.80	
	409662.19	3772932.01	109.30	
	409737.19	3772932.01	109.70	
	409812.19	3772932.01	109.80	
	409887.19	3772932.01	110.40	
	409962.19	3772932.01	110.80	
	409137.19	3773007.01	107.60	
	409212.19	3773007.01	107.60	
	409287.19	3773007.01	107.50	
	409362.19	3773007.01	108.20	
	409437.19	3773007.01	108.50	
	409512.19	3773007.01	109.00	
	409587.19	3773007.01	109.00	
	409662.19	3773007.01	109.50	
	409737.19	3773007.01	110.20	
	409812.19	3773007.01	110.60	
	409887.19	3773007.01	110.70	
	409962.19	3773007.01	111.50	
	409137.19	3773082.01	107.60	
	409212.19	3773082.01	108.10	
	409287.19	3773082.01	108.60	
	409362.19	3773082.01	108.50	
	409437.19	3773082.01	108.90	
	409512.19	3773082.01	109.50	
	409587.19	3773082.01	109.40	
	409662.19	3773082.01	109.90	
	409737.19	3773082.01	110.20	

Receptor Pathway

Receptor Network ID	Location: X-Coordinate [m]	Location: Y-Coordinate [m]	Terrain Elevations (Optional)	Flagpole Heights (Optional)
UCART1	409812.19	3773082.01	111.00	Option not Selected
	409887.19	3773082.01	111.10	
	409962.19	3773082.01	111.50	
	409137.19	3773157.01	108.00	
	409212.19	3773157.01	108.10	
	409287.19	3773157.01	109.10	
	409362.19	3773157.01	108.70	
	409437.19	3773157.01	109.90	
	409512.19	3773157.01	109.50	
	409587.19	3773157.01	109.90	
	409662.19	3773157.01	110.30	
	409737.19	3773157.01	111.00	
	409812.19	3773157.01	111.50	
	409887.19	3773157.01	111.50	
	409962.19	3773157.01	112.40	
	409137.19	3773232.01	109.50	
	409212.19	3773232.01	110.00	
	409287.19	3773232.01	109.50	
	409362.19	3773232.01	109.00	
	409437.19	3773232.01	109.30	
	409512.19	3773232.01	110.20	
	409587.19	3773232.01	110.10	
	409662.19	3773232.01	110.90	
	409737.19	3773232.01	111.40	
	409812.19	3773232.01	111.60	
	409887.19	3773232.01	111.90	
	409962.19	3773232.01	112.60	
	409137.19	3773307.01	109.60	
	409212.19	3773307.01	110.30	
	409287.19	3773307.01	109.50	
	409362.19	3773307.01	109.30	
	409437.19	3773307.01	110.40	
	409512.19	3773307.01	110.60	
	409587.19	3773307.01	111.00	
	409662.19	3773307.01	111.80	
	409737.19	3773307.01	111.90	
	409812.19	3773307.01	112.20	
	409887.19	3773307.01	112.30	
	409962.19	3773307.01	113.00	
	409137.19	3773382.01	109.70	
	409212.19	3773382.01	110.70	
	409287.19	3773382.01	110.20	
	409362.19	3773382.01	109.90	
	409437.19	3773382.01	110.50	
	409512.19	3773382.01	110.90	
	409587.19	3773382.01	111.70	
	409662.19	3773382.01	111.90	
	409737.19	3773382.01	112.50	

Receptor Pathway

Receptor Network ID	Location: X-Coordinate [m]	Location: Y-Coordinate [m]	Terrain Elevations (Optional)	Flagpole Heights (Optional)
UCART1	409812.19	3773382.01	112.60	Option not Selected
	409887.19	3773382.01	113.20	
	409962.19	3773382.01	113.90	
	409137.19	3773457.01	109.90	
	409212.19	3773457.01	111.30	
	409287.19	3773457.01	111.10	
	409362.19	3773457.01	110.20	
	409437.19	3773457.01	110.90	
	409512.19	3773457.01	111.50	
	409587.19	3773457.01	111.70	
	409662.19	3773457.01	112.10	
	409737.19	3773457.01	112.60	
	409812.19	3773457.01	113.10	
	409887.19	3773457.01	114.30	
	409962.19	3773457.01	114.20	
	409137.19	3773532.01	112.90	
	409212.19	3773532.01	111.70	
	409287.19	3773532.01	111.70	
	409362.19	3773532.01	111.60	
	409437.19	3773532.01	112.30	
	409512.19	3773532.01	112.10	
	409587.19	3773532.01	112.30	
	409662.19	3773532.01	112.70	
	409737.19	3773532.01	113.60	
	409812.19	3773532.01	113.60	
	409887.19	3773532.01	113.90	
	409962.19	3773532.01	114.50	
	409137.19	3773607.01	109.60	
	409212.19	3773607.01	113.60	
	409287.19	3773607.01	112.10	
	409362.19	3773607.01	112.50	
	409437.19	3773607.01	112.80	
	409512.19	3773607.01	113.10	
	409587.19	3773607.01	112.90	
	409662.19	3773607.01	113.20	
	409737.19	3773607.01	114.00	
	409812.19	3773607.01	114.00	
	409887.19	3773607.01	114.70	
	409962.19	3773607.01	115.10	
	409137.19	3773682.01	110.50	
	409212.19	3773682.01	109.90	
	409287.19	3773682.01	114.60	
	409362.19	3773682.01	112.50	
	409437.19	3773682.01	113.50	
	409512.19	3773682.01	113.50	
	409587.19	3773682.01	113.40	
	409662.19	3773682.01	114.80	
	409737.19	3773682.01	115.40	

Receptor Pathway

AERMOD

Receptor Network ID	Location: X-Coordinate [m]	Location: Y-Coordinate [m]	Terrain Elevations (Optional)	Flagpole Heights (Optional)
UCART1	409812.19	3773682.01	114.80	Option not Selected
	409887.19	3773682.01	115.80	
	409962.19	3773682.01	116.30	
	409137.19	3773757.01	113.60	
	409212.19	3773757.01	112.00	
	409287.19	3773757.01	109.50	
	409362.19	3773757.01	115.50	
	409437.19	3773757.01	113.40	
	409512.19	3773757.01	114.20	
	409587.19	3773757.01	114.40	
	409662.19	3773757.01	114.90	
	409737.19	3773757.01	115.60	
	409812.19	3773757.01	115.70	
	409887.19	3773757.01	115.90	
	409962.19	3773757.01	116.40	

Met Input Data

Surface Met Data

Filename: C:\Users\smyers\Desktop\AZUS_V9_ADJU\AZUS_v9.SFC

Format Type: Default AERMET format

Profile Met Data

Filename: C:\Users\smyers\Desktop\AZUS_V9_ADJU\AZUS_v9.PFL

Format Type: Default AERMET format

Wind Speed	Wind Direction
☐ Wind Speeds are Vector Mean (Not Scalar Means)	Rotation Adjustment [deg]:

Potential Temperature Profile

Base Elevation above MSL (for Primary Met Tower):   104.00   [m]

Meteorological Station Data

Stations	Station No.	Year	X Coordinate [m]	Y Coordinate [m]	Station Name
Surface		2012			
Upper Air		2012			
On-Site		2012			

Data Period

Data Period to Process

Start Date: 1/1/2012   Start Hour: 1   End Date: 12/31/2016   End Hour: 24

Wind Speed Categories

Stability Category	Wind Speed [m/s]	Stability Category	Wind Speed [m/s]
A	1.54	D	8.23
B	3.09	E	10.8
C	5.14	F	No Upper Bound

Output Pathway

Tabular Printed Outputs

Short Term Averaging Period	RECTABLE Highest Values Table										MAXTABLE Maximum Values Table	DAYTABLE Daily Values Table
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th		
1	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐		No
24	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐		No

Contour Plot Files (PLOTFILE)

Path for PLOTFILES: Irwindale Industrial.AD

Averaging Period	Source Group ID	High Value	File Name
1	ALL	1st	01H1GALL.PLT
24	ALL	1st	24H1GALL.PLT
Annual	ALL	N/A	AN00GALL.PLT

Sensitive Receptor Summary

C:\Lakes\AERMOD View\Irwindale Industrial\Irwindale Industrial.isc

PM10 - Concentration - Source Group: ALL

Averaging Period	Rank	Peak	Units	Receptor ID	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	0.07621	ug/m^3	Residence 1	409401.47	3772863.91	107.99	0.00	107.99	6/17/2014, 6
1-HR	1ST	0.02877	ug/m^3	Residence 2	409875.62	3772861.91	109.93	0.00	109.93	6/25/2015, 6
1-HR	1ST	0.06270	ug/m^3	Residence 3	409457.48	3773214.03	110.17	0.00	110.17	7/13/2014, 6
1-HR	1ST	0.02925	ug/m^3	School 4	409803.60	3773364.08	112.42	0.00	112.42	7/13/2014, 6
1-HR	1ST	0.08546	ug/m^3	Residence 5	409369.71	3772957.56	107.70	0.00	107.70	6/25/2015, 6
1-HR	1ST	0.08260	ug/m^3	Residence 6	409388.47	3773026.76	108.60	0.00	108.60	6/24/2015, 6
24-HR	1ST	0.01904	ug/m^3	Residence 1	409401.47	3772863.91	107.99	0.00	107.99	6/27/2015, 24
24-HR	1ST	0.00703	ug/m^3	Residence 2	409875.62	3772861.91	109.93	0.00	109.93	6/27/2015, 24
24-HR	1ST	0.01976	ug/m^3	Residence 3	409457.48	3773214.03	110.17	0.00	110.17	11/12/2014, 24
24-HR	1ST	0.00962	ug/m^3	School 4	409803.60	3773364.08	112.42	0.00	112.42	9/10/2013, 24
24-HR	1ST	0.02699	ug/m^3	Residence 5	409369.71	3772957.56	107.70	0.00	107.70	6/27/2015, 24
24-HR	1ST	0.02695	ug/m^3	Residence 6	409388.47	3773026.76	108.60	0.00	108.60	11/12/2014, 24
ANNUAL		0.00598	ug/m^3	Residence 1	409401.47	3772863.91	107.99	0.00	107.99	
ANNUAL		0.00206	ug/m^3	Residence 2	409875.62	3772861.91	109.93	0.00	109.93	
ANNUAL		0.00660	ug/m^3	Residence 3	409457.48	3773214.03	110.17	0.00	110.17	
ANNUAL		0.00276	ug/m^3	School 4	409803.60	3773364.08	112.42	0.00	112.42	
ANNUAL		0.00931	ug/m^3	Residence 5	409369.71	3772957.56	107.70	0.00	107.70	
ANNUAL		0.00974	ug/m^3	Residence 6	409388.47	3773026.76	108.60	0.00	108.60	