APPENDIX 1-6A

Revised HRA dated December 9, 2011

Air Quality and Health Risk Assessment
Riverwalk Marketplace Phase II
Porterville, California

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December 9, 2011

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ACRONYMS AND ABBREVIATIONS

µg	Micrograms
ADT	Average Daily Trips
AERMOD	American Meteorological Society/US Environmental Protection Agency Regulatory Model
ATCM	Air Toxic Control Measure
BAAQMD	Bay Area Air Quality Management District
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CCAA	California Clean Air Act
CO	Carbon Monoxide
EPA	Environmental Protection Agency
GAMAQI	Guide for Assessing and Mitigating Air Quality Impacts
HAP	Hazardous Air Pollutants
MSAT	Mobile Source Air Toxic
NAAQS	National Ambient Air Quality Standards
NO_X	Oxides of Nitrogen
NO_2	Nitrogen Dioxide
PM_{10}	Particulate matter with an aerodynamic diameter of 10 microns or less
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of 2.5 microns or less
ppm	Parts per million
SCAQMD	South Coast Air Quality Management District
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SIL	Significant Impact Level
SO_x	Oxides of Sulfur
SO_2	Sulfur Dioxide
TIS	Traffic Impact Study
TRU	Transport Refrigeration Unit
VMT	Vehicle Miles Traveled

SECTION 1: INTRODUCTION

1.1 - Purpose and Methods of Analysis

The following air quality and health risk analysis was prepared to evaluate whether the estimated criteria air pollutant and toxic air contaminant (TAC) emissions associated with the operation of the Riverwalk Marketplace Phase II development (the Project) would result in significant local air quality and health risk impacts to sensitive receptors in the area surrounding the Project. The Project consists of a new Walmart store and associated retail pads. The focus of this analyses centered on estimating the impacts from the operation of both mobile and stationary sources of criteria pollutants (Oxides of Nitrogen – NO_x, carbon monoxide – CO, Oxides of Sulfur – SO_x, and particulate matter – PM_{10} and $PM_{2.5}$) as well as emissions of toxic air contaminant (TACs). The largest emitters are associated with the operation of diesel delivery trucks, which are a major source of both criteria pollutants and diesel particulate matter (DPM). The California Air Resources Board (CARB) has identified DPM as the major airborne carcinogenic substance in California (CARB 1998).

An expanded analysis was also carried out to examine potential cumulative emission impacts associated with the combined operation of the Project and nearby regional sources of emissions including the Riverwalk Marketplace Phase I, adjacent highways, other nearby emission sources currently in operation, and reasonably foreseeable projects in the vicinity of the Project.

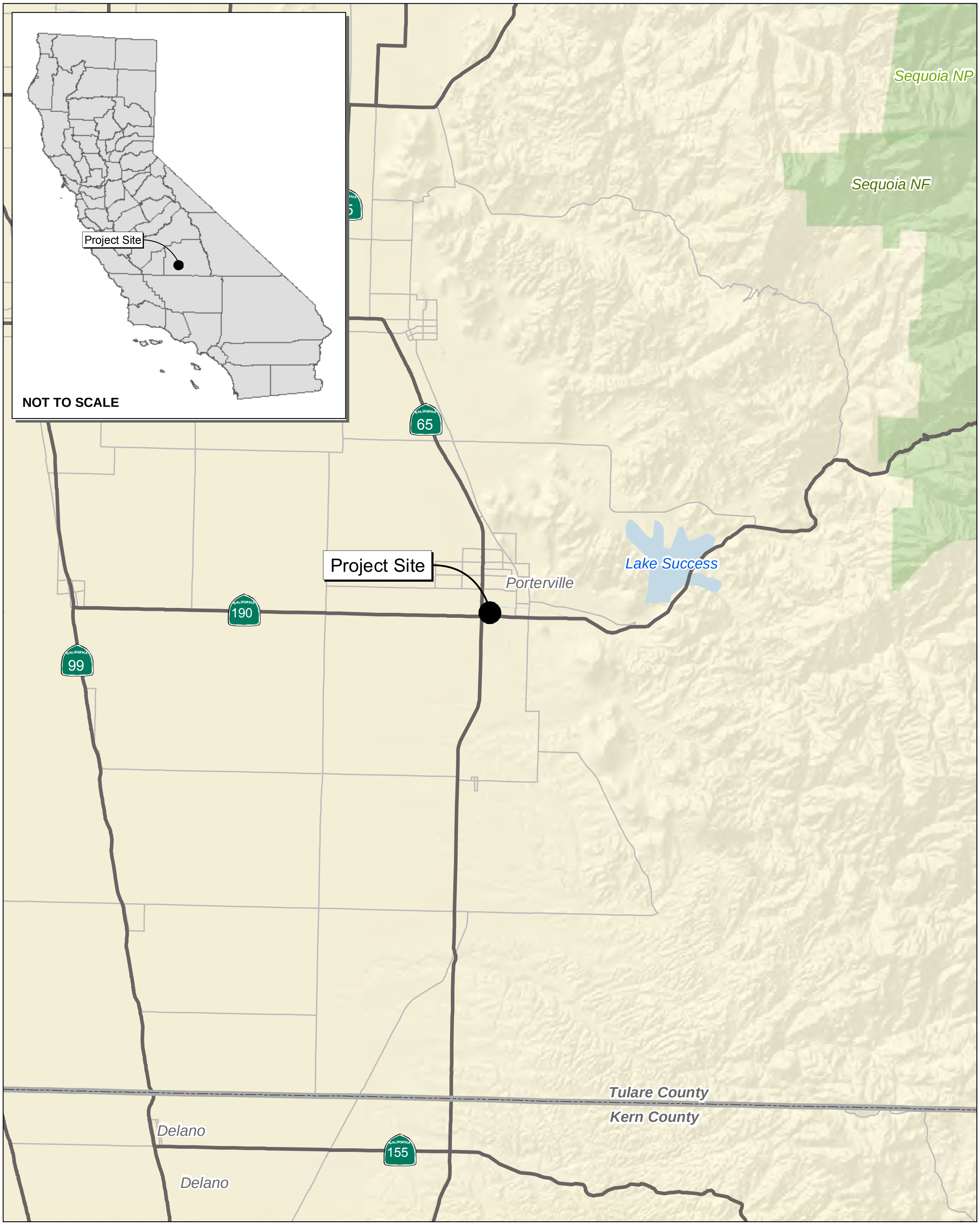
The methodology applied in this analysis follows the Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI) (SJVAPCD 2002) and the Guidance for Air Dispersion Modeling (SJVAPCD 2010) prepared by the San Joaquin Valley Air Pollution Control District (SJVAPCD) for quantification of emissions and evaluation of potential impacts to air resources. In addition, the CEQA Air Quality Guidance published by the Bay Area Air Quality Management District (BAAQMD 2011a and 2011b) was also used in developing the cumulative impact assessment.

1.2 - Project Location

The Project is located in the City of Porterville, Tulare County, CA and is situated just northeast of the intersection of State Road 65 (SR 65) and SR 190 as shown in Exhibit 1 and Exhibit 2. The primary local access to the Project site is from Jaye Street to the east, Vandalia Avenue to the south, Springville Avenue to the north, and Indiana Street to the west.

1.3 - Project Description

The Project involves the development of a retail commercial center containing 202,854 square feet of floor space among five building pads as summarized in Exhibit 3 and Table 1.



Source: Census 2000 Data, The CaSIL, MBA GIS 2009.

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Exhibit 1
Regional Location Map

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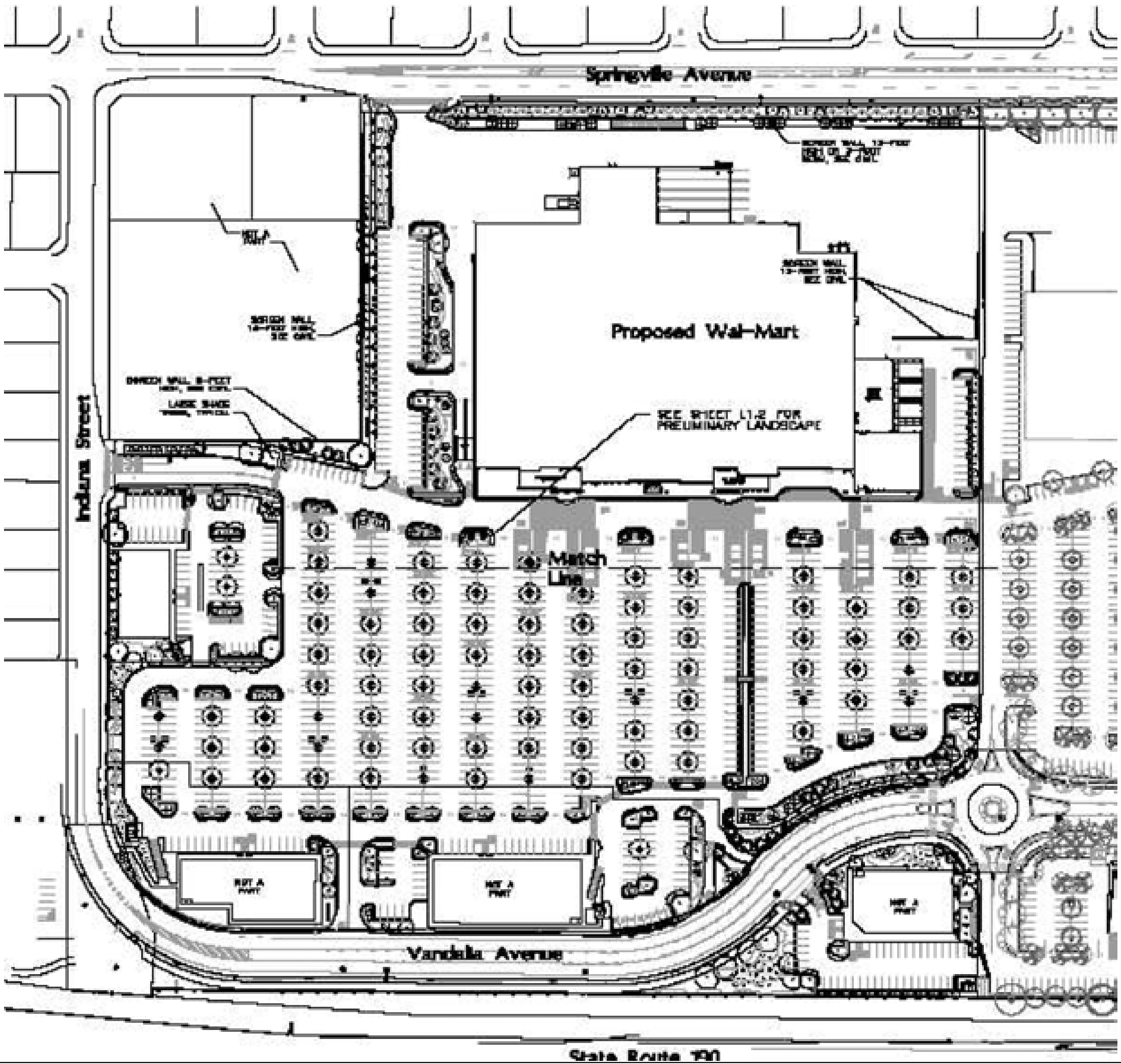
Exhibit 2
Local Project Aerial Base Map

CEI ENGINEERING ASSOCIATES, INC ● RIVERWALK MARKETPLACE PHASE II
AIR QUALITY AND HEALTH RISK ASSESSMENT



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NORTH

Not to Scale

Exhibit 3
Site Plan

Table 1: Summary of Project Development

Land Use	Building Size (square feet)
Walmart	161,602
Pad 12	9,386
Pad 13	10,995
Pad 14	14,090
Outlot A	6,781
Total	202,854
Source: Riverwalk Marketplace Phase II Revised Draft EIR (City of Porterville 2011)	

The proposed Walmart store would offer a full-service supermarket, garden center, pharmacy (with a drive-through component), medical clinic, portrait studio, hair salon, and a nail salon. The range of products available will include groceries and general retail merchandise, including alcohol for off-site consumption, pool chemicals, petroleum products such as motor oils, pesticides, and paint products.

The store would operate 24 hours a day and would employ approximately 300 persons. There would be more than three shifts since some part-time associates and full-time associates will have flexible working hours throughout the week.

- Truck deliveries would be received on the north side of the Walmart building from Springville Avenue. Delivery hours are not limited; however, the anticipated delivery schedule is as follows:
- Four axle diesel trucks with transport refrigeration units, two units a day or thirteen units a week;
- Four axle diesel trucks without transport refrigeration units, six units a day or thirty-eight units a week; and
- Two axle vendor deliveries, nine units per day or 44 units a week.

All Walmart vehicles are assumed to be diesel-powered with the 4 axle trucks represented as heavy-heavy duty trucks (33,000 pounds and greater gross weight) and two axle trucks represented as medium heavy duty trucks (14,001 to 33,000 pound gross weight).

Four other retail pads would be situated along the perimeter of the Project boundary. No specific tenants have been identified at this time. Truck deliveries assumed one 2-axle diesel truck per day at each retail pad. The trucks servicing the four other retail pads were assumed to be light heavy-duty diesel trucks (10,001 to 14,000 gross weight).

This analysis applied the estimated emissions resulting from the operation of the Project's emission sources along with an air dispersion model to calculate air pollutant and health risk impacts at nearby sensitive receptor locations. The changes in local air quality and health risk impacts resulting from the operation of the Project were then compared to the applicable air quality and health risk significance thresholds established by the SJVAPCD and the United States Environmental Protection Agency (EPA) and adopted for this analysis.

1.4 - Summary

The report provides an analysis of the estimated Project-level and cumulative air quality and health risk impacts associated with the operation of the Riverwalk Marketplace Phase II (the Project) development in Porterville, CA. The analysis compiled estimates of the air emissions from various operations including the onsite and offsite travel of customer vehicles, onsite and offsite travel of heavy duty diesel delivery vehicles and transport refrigeration units, delivery truck idling, and from building natural gas combustion for heating of air and water. The changes in air quality and health risk impacts resulting from the Project were estimated at nearby sensitive/residential receptor locations using an air dispersion model approved by the SJVAPCD. The results of this report support the following conclusions with respect to the Project:

Project-Level Impacts

- The changes in Project-level criteria pollutant air quality resulting from the operation of the Project would not exceed the SJVAPCD criteria air pollutant significance thresholds or the United States Environmental Protection Agency (USEPA) significance impact levels adopted for this Project

- The changes in Project-level health risks resulting from the operation of the Project would not exceed the SJVAPCD health risk significance threshold of a cancer risk of 10 in one million adopted for this Project

Cumulative Impacts

- The cumulative criteria pollutant impacts of Project emissions, emissions from the Riverside Marketplace Phase I and regional "background" air quality would not exceed the SJVAPCD criteria air pollutant significance thresholds or the United States Environmental Protection Agency (USEPA) significance impact levels adopted for this Project

- The cumulative health risk impacts of Project emissions in combination with other regional sources of toxic air contaminant emissions would not exceed cumulative significance impact threshold cancer level of 100 in one million adopted for this Project. The regional emission sources were identified within a "zone of influence" of 1,000 feet and included the Riverwalk Marketplace Phase I, a local existing gas service station located at the corner of Jaye Street and State Route 190, and vehicular traffic along State Routes 190 and 65.

- Cumulative health risk impacts considering an expanded zone of "influence of influence" of 1 mile in accordance with guidance from the SJCAPCD would also not exceed the cumulative significance threshold impact cancer risk of 100 in one million adopted for this study. Additional sources of TC emissions included within this expanded zone of influence included the existing Walmart Distribution Center, and the reasonable foreseeable proposed Jaye Street Crossing Project and a proposed manufacturing land use project located at the intersection of Jaye Street and Montgomery Avenue,

SECTION 2: SETTING

2.1 - Regulatory Setting

Air pollutants are regulated at the national, State, and air basin level with each agency having a different level of regulatory responsibility. The EPA regulates at the national level. CARB regulates at the State level while the SJVAPCD regulates at the air basin level.

2.1.1 - National and State Regulatory Agencies

The EPA handles global, international, national, and interstate air pollution issues and policies. The EPA sets national vehicle and stationary source emission standards, oversees approval of all State Implementation Plans, provides research and guidance for air pollution programs, and sets National Ambient Air Quality Standards, also known as federal standards. There are national standards for six common air pollutants, called criteria air pollutants, which were identified from provisions of the Clean Air Act of 1970.

The criteria pollutants are:

- Ozone;
- Particulate matter (PM_{10} and $PM_{2.5}$);
- Nitrogen dioxide;
- Carbon monoxide (CO);
- Lead; and
- Sulfur dioxide.

The national standards were set to protect public health, including that of sensitive individuals; thus, the standards continue to change as more medical research is available regarding the health effects of the criteria pollutants. Primary national standards are the levels of air quality necessary, with an adequate margin of safety, to protect the public health.

A State Implementation Plan is a document prepared by each State describing existing air quality conditions and measures that will be followed to attain and maintain National standards. The State Implementation Plan for the State of California is administered by the ARB, which has overall responsibility for statewide air quality maintenance and air pollution prevention. The ARB also administers California Ambient Air Quality Standards (CAAQS) for the 10 air pollutants designated in the California Clean Air Act. The 10 State air pollutants are the six National standards listed above as well visibility-reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride.

The national and State ambient air quality standards, relevant effects, properties, and sources of the pollutants are summarized in Table 2.

Table 2: Air Pollutant Standards, Effects, Properties, and Sources

Air Pollutant	Averaging Time	California Standard	National Standard [a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Ozone	1 Hour	0.09 ppm	—	(a) Decrease of pulmonary function and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) Vegetation damage; (f) Property damage.	Ozone is a photochemical pollutant as it is not emitted directly into the atmosphere, but is formed by a complex series of chemical reactions between volatile organic compounds (VOC), oxides of nitrogen (NO_x) and sunlight. Ozone is a regional pollutant that is generated over a large area and is transported and spread by the wind.	Ozone is a secondary pollutant; thus, it is not emitted directly into the lower level of the atmosphere. The primary sources of ozone precursors (VOC and NO_x) are mobile sources (on-road and off-road vehicle exhaust).
	8 Hour	0.070 ppm	0.075 ppm			
Carbon Monoxide (CO)	1 Hour	20 ppm	35 ppm	(a) Aggravation of angina pectoris (chest pain) and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses.	Carbon monoxide (CO) is a colorless, odorless, toxic gas. CO is somewhat soluble in water; therefore, rainfall and fog can suppress CO conditions. CO enters the body through the lungs, dissolves in the blood, replaces oxygen as an attachment to hemoglobin, and reduces available oxygen in the blood.	CO is produced by incomplete combustion of carbon-containing fuels (e.g., gasoline, diesel fuel, and biomass). Sources include motor vehicle exhaust, industrial processes (metals processing and chemical manufacturing), residential wood burning, and natural sources.
	8 Hour	9.0 ppm	9 ppm			
Nitrogen Dioxide [c] (NO_2)	1 Hour	0.18 ppm	0.100 ppm	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration.	During combustion of fossil fuels, oxygen reacts with nitrogen to produce nitrogen oxides - NO_x (NO, NO_2, NO_3, N_2O, N_2O_3, N_2O_4, and N_2O_5). NO_x is a precursor to ozone, PM_{10}, and $PM_{2.5}$ formation. NO_x can react with compounds to form nitric acid and related particles.	NO_x is produced in motor vehicle internal combustion engines and fossil fuel-fired electric utility and industrial boilers. NO_2 concentrations near major roads can be 30 to 100 percent higher than those at monitoring stations.
	Annual	0.030 ppm	0.053 ppm			

Table 2 (cont.): Air Pollutants

Air Pollutant	Averaging Time	California Standard	National Standard [a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Sulfur Dioxide (SO_2)	1 Hour	0.25 ppm	0.075 ppm [d]	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient sulfur dioxide levels. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.	Sulfur dioxide is a colorless, pungent gas. At levels greater than 0.5 ppm, the gas has a strong odor, similar to rotten eggs. Sulfur oxides (SO_x) include sulfur dioxide and sulfur trioxide. Sulfuric acid is formed from sulfur dioxide, which can lead to acid deposition and can harm natural resources and materials. Although sulfur dioxide concentrations have been reduced to levels well below State and national standards, further reductions are desirable because sulfur dioxide is a precursor to sulfate and PM_{10}.	Human caused sources include fossil-fuel combustion, mineral ore processing, and chemical manufacturing. Volcanic emissions are a natural source of sulfur dioxide. The gas can also be produced in the air by dimethylsulfide and hydrogen sulfide. Sulfur dioxide is removed from the air by dissolution in water, chemical reactions, and transfer to soils and ice caps. The sulfur dioxide levels in the State are well below the maximum standards.
	3 Hour[1]	—	0.50 ppm			
	24 Hour	0.04 ppm	0.14 ppm			
	Annual		0.03 ppm			
Particulate Matter (PM_{10})	24 hour	50 µg/m^3	150 µg/m^3	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; (c) Increased risk of premature death from heart or lung diseases in the elderly. Daily fluctuations in $PM_{2.5}$ levels have been related to hospital admissions for acute respiratory conditions, school absences, and increased medication use in children and adults with asthma.	Suspended particulate matter is a mixture of small particles that consist of dry solid fragments, droplets of water, or solid cores with liquid coatings. The particles vary in shape, size, and composition. PM_{10} refers to particulate matter that is between 2.5 and 10 microns in diameter, (1 micron is one-millionth of a meter). $PM_{2.5}$ refers to particulate matter that is 2.5 microns or less in diameter.	Stationary sources include fuel combustion for electrical utilities, residential space heating, and industrial processes; construction and demolition; metals, minerals, and petrochemicals; wood products processing; mills and elevators used in agriculture; erosion from tilled lands; waste disposal, and recycling. Mobile or transportation-related sources are from vehicle exhaust and road dust.
	Mean	20 µg/m^3	—			
Particulate Matter ($PM_{2.5}$)	24 Hour	—	35 µg/m^3			
	Annual	12 µg/m^3	15.0 µg/m^3			
Sulfates	24 Hour	25 µg/m^3	—	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage.	The sulfate ion is a polyatomic anion with the empirical formula SO_4^{2-}. Sulfates occur in combination with metal and/or hydrogen ions. Many sulfates are soluble in water.	Sulfates are particulates formed through the photochemical oxidation of sulfur dioxide. In California, the main source of sulfur compounds is combustion of gasoline and diesel fuel.

Table 2 (cont.): Air Pollutants

Air Pollutant	Averaging Time	California Standard	National Standard [a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Lead [b]	30-day	1.5 µg/m^3	—	Lead accumulates in bones, soft tissue, and blood and can affect the kidneys, liver, and nervous system. It can cause impairment of blood formation and nerve conduction. The more serious effects of lead poisoning include behavior disorders, mental retardation, neurological impairment, learning deficiencies, and low IQs. Lead may also contribute to high blood pressure and heart disease.	Lead is a solid heavy metal that can exist in air pollution as an aerosol particle component. An aerosol is a collection of solid, liquid, or mixed-phase particles suspended in the air. Lead was first regulated as an air pollutant in 1976. Leaded gasoline was first marketed in 1923 and was used in motor vehicles until around 1970. Lead concentrations have not exceeded State or national air quality standards at any monitoring station since 1982.	Lead ore crushing, lead-ore smelting, and battery manufacturing are currently the largest sources of lead in the atmosphere in the United States. Other sources include dust from soils contaminated with lead-based paint, solid waste disposal, and crustal physical weathering. Lead can be removed from the atmosphere through deposition to soils, ice caps, oceans, and inhalation.
	Quarter	—	1.5 µg/m^3			
	Rolling 3-month average	—	0.15 µg/m^3			
Vinyl Chloride [b]	24 Hour	0.01 ppm	—	Short-term exposure to high levels of vinyl chloride in the air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of a rare cancer, liver angiosarcoma, and have suggested a relationship between exposure and lung and brain cancers.	Vinyl chloride, or chloroethene, is a chlorinated hydrocarbon and a colorless gas with a mild, sweet odor. In 1990, CARB identified vinyl chloride as a toxic air contaminant and estimated a cancer unit risk factor.	Most vinyl chloride is used to make polyvinyl chloride plastic and vinyl products, including pipes, wire and cable coatings, and packaging materials. It can be formed when plastics containing these substances are left to decompose in solid waste landfills. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites.
Hydrogen Sulfide	1 Hour	0.03 ppm	—	High levels of hydrogen sulfide can cause immediate respiratory arrest. It can irritate the eyes and respiratory tract and cause headache, nausea, vomiting, and cough. Long exposure can cause pulmonary edema.	Hydrogen sulfide (H_2S) is a flammable, colorless, poisonous gas that smells like rotten eggs.	Manure, storage tanks, ponds, anaerobic lagoons, and land application sites are the primary sources of hydrogen sulfide. Anthropogenic sources include the combustion of sulfur containing fuels (oil and coal).

Table 2 (cont.): Air Pollutants

Air Pollutant	Averaging Time	California Standard	National Standard [a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Volatile Organic Compounds (VOC)		There are no State or national ambient air quality standards for VOCs because they are not classified as criteria pollutants.		Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations because of interference with oxygen uptake. In general, concentrations of VOCs are suspected to cause eye, nose, and throat irritation; headaches; loss of coordination; nausea; and damage to the liver, the kidneys, and the central nervous system. Many VOCs have been classified as toxic air contaminants.	Reactive organic gases (ROGs), or VOCs, are defined as any compound of carbon—excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate—that participates in atmospheric photochemical reactions. Although there are slight differences in the definition of ROGs and VOCs, the two terms are often used interchangeably.	Indoor sources of VOCs include paints, solvents, aerosol sprays, cleansers, tobacco smoke, etc. Outdoor sources of VOCs are from combustion and fuel evaporation. A reduction in VOC emissions reduces certain chemical reactions that contribute to the formulation of ozone. VOCs are transformed into organic aerosols in the atmosphere, which contribute to higher PM_{10} and lower visibility.
Diesel particulate matter (DPM)		There are no ambient air quality standards for DPM.		Some short-term (acute) effects of DPM exposure include eye, nose, throat, and lung irritation, coughs, headaches, light-headedness, and nausea. 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. Human studies on the carcinogenicity of DPM demonstrate an increased risk of lung cancer, although the increased risk cannot be clearly attributed to diesel exhaust exposure.	DPM is a source of $PM_{2.5}$—diesel particles are typically 2.5 microns and smaller. Diesel exhaust is a complex mixture of thousands of particles and gases that is produced when an engine burns diesel fuel. Organic compounds account for 80 percent of the total particulate matter mass, which consists of compounds such as hydrocarbons and their derivatives, and polycyclic aromatic hydrocarbons and their derivatives. Fifteen polycyclic aromatic hydrocarbons are confirmed carcinogens, a number of which are found in diesel exhaust.	Diesel exhaust is a major source of ambient particulate matter pollution in urban environments. Typically, the main source of DPM is from combustion of diesel fuel in diesel-powered engines. Such engines are in on-road vehicles such as diesel trucks, off-road construction vehicles, diesel electrical generators, and various pieces of stationary construction equipment.
Benzene		There are no ambient air quality standards for benzene.		Short-term (acute) exposure of high doses from inhalation of benzene may cause dizziness, drowsiness, headaches, eye irritation, skin irritation, and respiratory tract	Benzene is a VOC. It is a clear or colorless light-yellow, volatile, highly flammable liquid with a gasoline-like odor. The EPA has classified benzene as a “Group A”	Benzene is emitted into the air from fuel evaporation, motor vehicle exhaust, tobacco smoke, and from burning oil and coal. Benzene is used as a solvent for paints, inks,

Table 2 (cont.): Air Pollutants

Air Pollutant	Averaging Time	California Standard	National Standard [a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
				irritation, and at higher levels, loss of consciousness can occur. Long-term (chronic) occupational exposure of high doses has caused blood disorders, leukemia, and lymphatic cancer.	carcinogen.	oils, waxes, plastic, and rubber. It is used in the extraction of oils from seeds and nuts and in the manufacture of detergents, explosives, and pharmaceuticals.

Abbreviations:
ppm = parts per million (concentration) µg/m^3 = micrograms per cubic meter Annual = Annual Arithmetic Mean 30-day = 30-day average Quarter = Calendar quarter

[a] National standard refers to the primary national ambient air quality standard, or the levels of air quality necessary, with an adequate margin of safety to protect the public health. All standards listed are primary standards except for 3 Hour SO_2, which is a secondary standard. A secondary standard is the level of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[b] The CARB 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.

[c] Effective April 12, 2010, to attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb, or 188 ug/m^3

[d] To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

Source of effects: CARB
Source of standards: CARB 2010a
Source of properties and sources: EPA 1999; EPA 2003; EPA 2009

2.1.2 - Toxic Air Contaminants

Besides the "criteria" air pollutants, there is another group of substances found in ambient air referred to as Hazardous Air Pollutants (HAPs) under the Federal Clean Air Act and Toxic Air Contaminants (TACs) under the California Clean Air Act. These contaminants tend to be localized and are found in relatively low concentrations in ambient air. However, they can result in adverse chronic health effects if exposure to low concentrations occurs for long periods. They are regulated at the local, State, and federal level. HAPs are the air contaminants identified by US EPA as known or suspected to cancer, serious illness, birth defects, or death. Many of these contaminants originate from human activities, such as fuel combustion and solvent use. Mobile Source Air Toxics (MSATs) are a subset of the 188 HAPs. Of the 21 HAPs identified by EPA as MSATs, a priority list of six priority HAPs were identified that include: diesel exhaust, benzene, formaldehyde, acetaldehyde, acrolein, and 1, 3-butadiene. While vehicle miles traveled in the United States is expected to increase by 64 percent over the period 2000 to 2020, emissions of MSATs are anticipated to decrease substantially as a result of efforts to control mobile source emissions (by 57% to 67% depending on the contaminant).

Particulate matter from diesel exhaust is the predominant TAC in urban air and is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average). According to CARB, diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by CARB, and are listed as carcinogens either under State Proposition 65 or under the Federal Hazardous Air Pollutants programs.

The CARB Statewide comprehensive air toxics program was established in the early 1980s. The TAC Identification and Control Act (AB 1807, Tanner 1983) created California's program to reduce exposure to air toxics. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, Connelly 1987) supplements the AB 1807 program by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

Under AB 1807, the ARB is required to use certain criteria in the prioritization for the identification and control of air toxics. In selecting substances for review, the CARB must consider criteria relating to "the risk of harm to public health, amount or potential amount of emissions, manner of, and exposure to, usage of the substance in California, persistence in the atmosphere, and ambient concentrations in the community." AB 1807 also requires the CARB to use available information gathered from the CARB 2588 program to include in the prioritization of compounds. In September 1992, the Hot Spots Act was amended by Senate Bill 1731, which required facilities that pose a significant health risk to reduce their risk through a risk management plan.

The CARB has made estimates of total cancer risk from diesel and non-diesel TACs throughout California. As shown in Exhibit 4, the cancer risk in the Project area based on cancer risk estimates for the year 2010 is between 50 and 250 in one million.

2.2 - Physical Setting

2.2.1 - Climate

The Project is located in the City of Porterville in Tulare County. This region is located within the San Joaquin Valley Air Basin (SJVAB). Regional and local air quality is impacted by topography, dominant airflows, atmospheric inversions, location and season. The combination of topography and inversion layers generally prevents dispersion of air pollutants.

The SJVAB has an "inland Mediterranean" climate and is characterized by long, hot, dry summers and short, foggy winters. Sunlight can be a catalyst in the formation of some air pollutants (such as ozone); the SJVAB averages over 260 sunny days per year. At the National Oceanic and Atmospheric Administration weather station in Porterville, the maximum daily average temperatures (approximately 99.0 ºF) occur in July. The range of daily temperature in the summer can vary as much as 30 ºF. The lowest average minimum daily temperatures (approximately 36.5 ºF) occur in January and December. The annual average temperature is 63.7 ºF. The majority of rainfall in the SJVAB occurs between November and April. The Porterville weather station receives an average of 10.9 inches of precipitation per year.

Topography

The SJVAB is generally shaped like a bowl. It is open in the north and is surrounded by mountain ranges on all other sides. The Sierra Nevada mountains are along the eastern boundary (8,000 to 14,000 feet in elevation), the Coast Ranges are along the western boundary (3,000 feet in elevation), and the Tehachapi Mountains are along the southern boundary (6,000 to 8,000 feet in elevation) (SJVAPCD 2002).

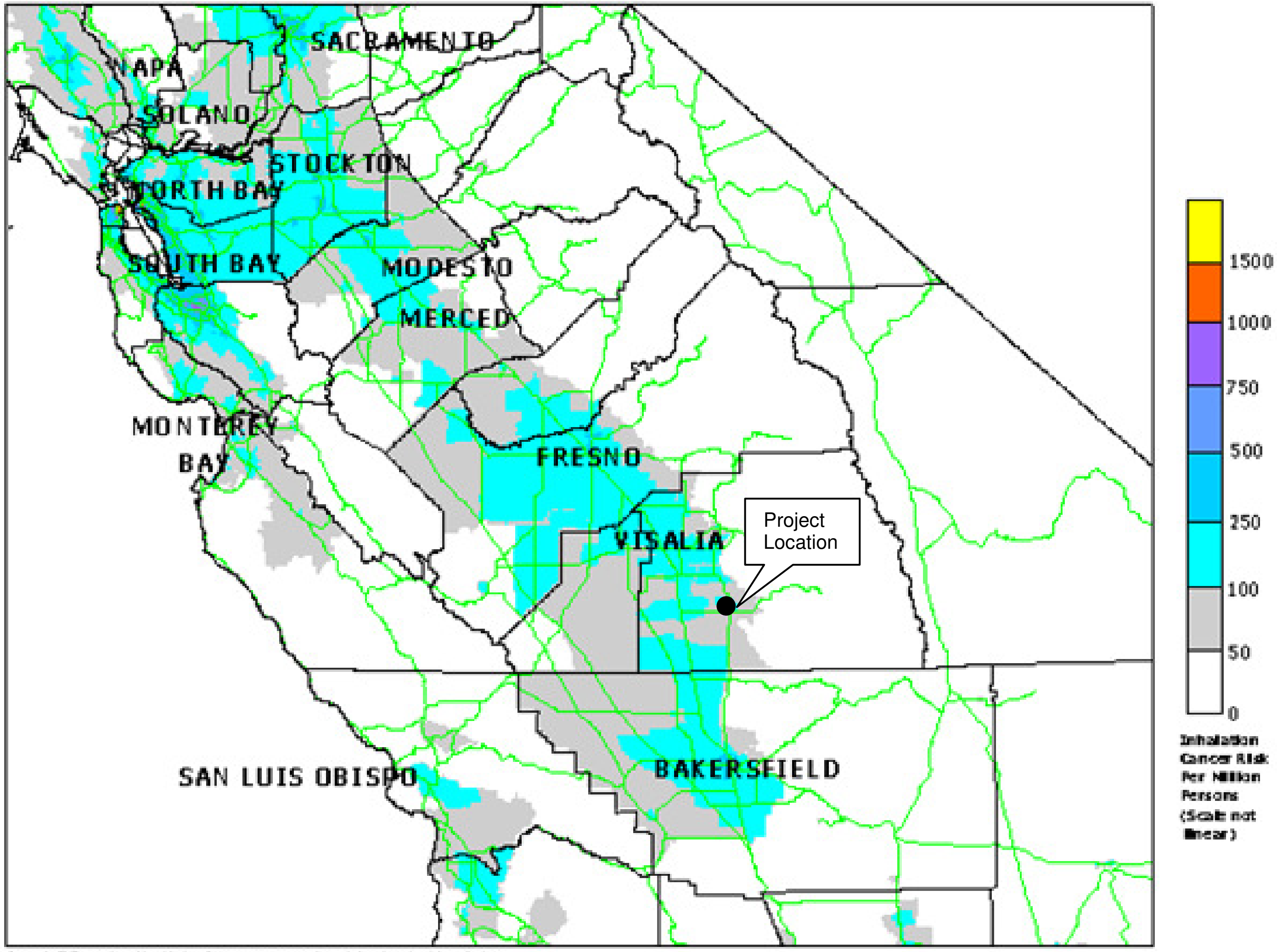
Dominant Airflow

Dominant airflows provide the driving mechanism for transport and dispersion of air pollution**.** The mountains surrounding the SJVAB form natural horizontal barriers to the dispersion of air contaminants. The wind generally flows south-southeast through the valley, through the Tehachapi Pass and into the Southeast Desert Air Basin portion of Kern County. As the wind moves through the SJVAB, it mixes with the air pollution generated locally, generally transporting air pollutants from the north to the south in the summer and in a reverse flow in the winter due to these influences. The predominant winds in the Project area are from the northwest and southeast directions along the alignment with San Joaquin Valley as shown in Exhibit 5 as derived from wind data at the Porterville Airport located approximately 2.4 miles southwest of the Project site.

Total Risk (diesel + nondiesel)

Central California: 2010 Cancer Risk Per Million

All Sources



See ARB web site list of sources not yet included in risk.

ARB:EIB:SRF 6/18/2004

Michael Brandman Associates

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Exhibit 4

Estimated Cancer Risk in Central California

CEI ENGINEERING ASSOCIATES, INC ● RIVERWALK MARKETPLACE PHASE II
AIR QUALITY AND HEALTH RISK ASSESSMENT

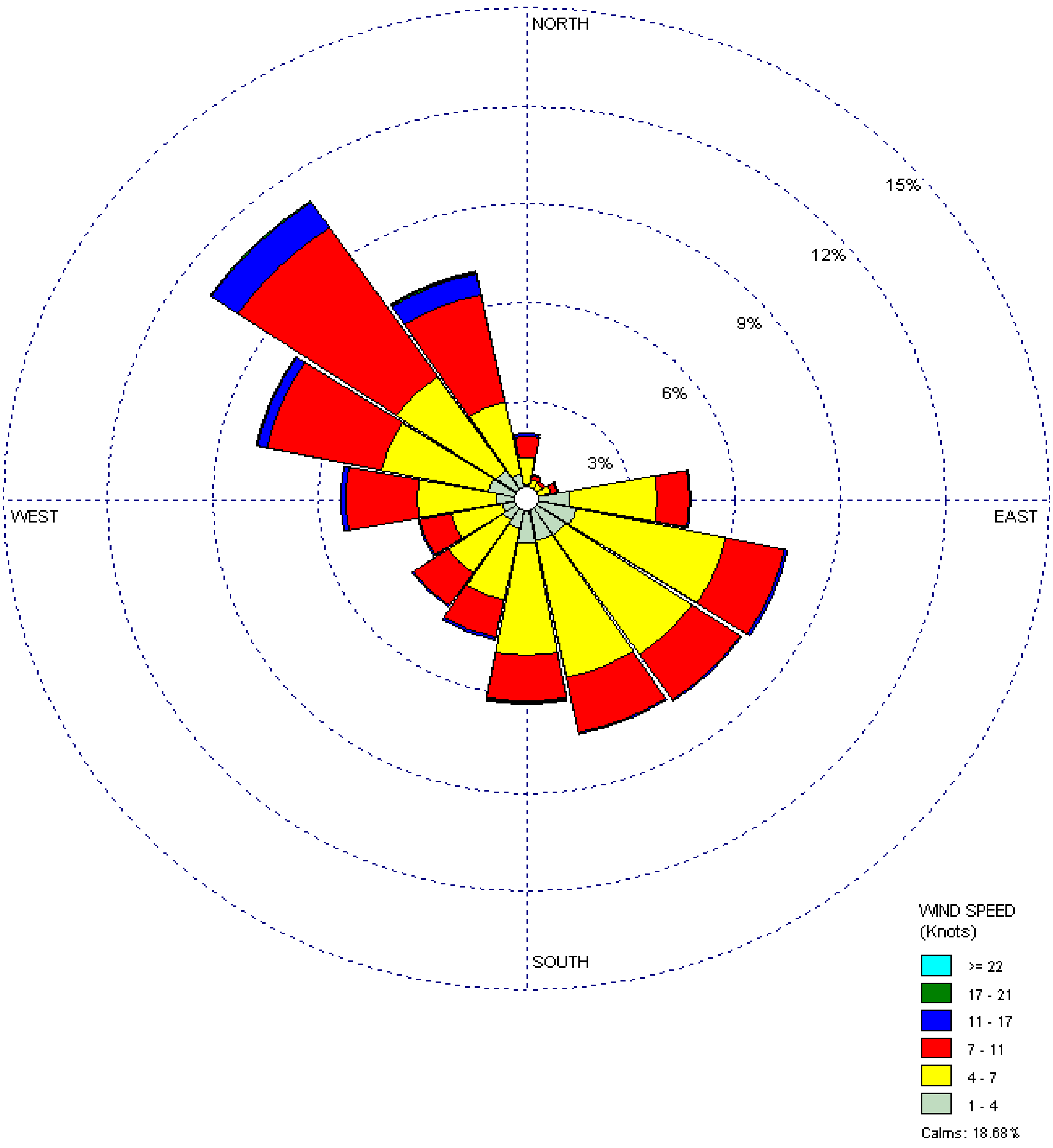

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Exhibit 5
Wind Rose – Porterville Airport (2005-2009)

Inversions

Generally, the temperature of air decreases with height, creating a gradient from warmer air near the ground to cooler air at elevation. This gradient of cooler air over warm air is known as the environmental lapse rate. Inversions occur when warm air sits over cooler air, trapping the cooler air near the ground. These inversions trap pollutants from dispersing vertically and the mountains surrounding the San Joaquin Valley trap the pollutants from dispersing horizontally. Strong temperature inversions occur throughout the SJVAB in the summer, fall, and winter. Daytime temperature inversions occur at elevations of 2,000 to 2,500 feet above the San Joaquin Valley floor during the summer and at 500 to 1,000 feet during the winter. The result is a relatively high concentration of air pollution in the valley during inversion episodes. These inversions cause haziness, which in addition to moisture may include suspended dust, a variety of chemical aerosols emitted from vehicles, particulates from wood stoves, and other pollutants.

Location and Season

Because of the prevailing daytime winds and time-delayed nature of ozone, concentrations are highest in the southern portion of the SJVAB, such as around Bakersfield. Summers are often periods of hazy visibility and occasionally unhealthful air, while winter air quality impacts tend to be localized and can consist of (but are not exclusive to) odors from agricultural operations, soot or smoke around residential, agricultural and hazard reduction wood burning, or dust near mineral resource recovery operations.

2.2.2 - Local Air Quality

The SJVAPCD operates monitoring stations throughout the SJVAB. Existing levels of ambient air quality and historical trends and projections of air quality in the Project area are best documented from measurements made near the Project site. Table 3 summarizes 2008 through 2010 published monitoring data available for the Visalia - North Church Street air-monitoring station located in Visalia approximately 22.3 miles northwest of the Project. Measurements of ozone, nitrogen dioxide, PM_{10} , and $PM_{2.5}$ are currently being made at the Visalia monitoring station. To complete the data record, the closest monitoring station to Porterville that monitors CO is in Bakersfield at the Golden State Highway monitoring station. The closest monitoring station to Porterville that measures SO_2 is at the 1st Street station in Fresno. These data are considered representative of the Project site. The data shows that during the past few years, the Project area has exceeded the national and/or State ozone, PM_{10}, and $PM_{2.5}$ ambient air quality standards.

Table 3: Air Quality Monitoring Summary

Air Pollutant, Location	Averaging Time	Item	2008	2009	2010
Ozone Visalia	1 Hour	Max 1 Hour (ppm)	0.130	0.120	0.122
		Days > State Standard (0.09 ppm)	44	23	15
	8 Hour	Max 8 Hour (ppm)	0.121	0.092	0.104
		Days > State Standard (0.07 ppm)	94	68	57

Air Pollutant, Location	Averaging Time	Item	2008	2009	2010
		Days > National Standard (0.075 ppm)	60	48	34
Carbon monoxide Bakersfield.	1 Hour(1)	Max 1 Hour (ppm)	3.10	2.16	1.91
		Days> State Standard (20 ppm)	0	0	0
		Days > National Standard (35 ppm)	0	0	0
	8 Hour	Max 8 Hour (ppm)	2.17	1.51	1.34
		Days > State Standard (9.0 ppm)	0	0	0
		Days > National Standard (9 ppm)	0	0	0
Nitrogen dioxide Visalia	Annual	Annual Average (ppm)	0.014	0.015	0.013
	1 Hour	Max 1 Hour (ppm)	0.077	0.068	0.077
		98^{th} Percentile of Max 1-hour Levels(2)	----	0.061	----
		Days > State Standard (0.18 ppm)	0	0	0
		Days > National Standard (0.10 ppm)(2)	----	0	0
Sulfur dioxide Fresno	Annual	Annual Average (ppm)	0.001	0.001	0.000
	1 Hour	Max 1-hour (ppm)	0.06(4)	ND	ND
		Days > State Standard (0.25 ppm)	0	ND	ND
		99^{th} Percentile of Max 1-hour Levels(3)	----	0.007(4)	----
		Days > National Standard (0.075 ppm)(3)	----	0	----
	3 Hour	Max 3-hour (ppm)	0.05(4)	ND	ND
		Days>National Standard (0.50 ppm)	0	ND	ND
	24 Hour	Max 24 Hour (ppm)	0.003	0.005	0.004
		Days > State Standard (0.04 ppm)	0	0	0
Inhalable coarse particles (PM_{10}) Visalia	Annual	Annual Average ($\mu g/m^3$)	47.3	41.8	33.8
	24 hour	24 Hour ($\mu g/m^3$)	103.9	92.1	90.8
		Days > State Standard (50 $\mu g/m^3$)	26	20	10
		Days > National Standard (150 $\mu g/m^3$)	0	0	0
Fine particulate matter ($PM_{2.5}$) Visalia	Annual	Annual Average ($\mu g/m^3$)	19.8	16.0	13.5
	24 Hour	24 Hour ($\mu g/m^3$)	68.2	63.5	59.8
		Measured Days > National Standard (35 $\mu g/m^3$)	17	6	3

Abbreviations:
> = exceed | ppm = parts per million | $\mu g/m^3$ = micrograms per cubic meter
ID = insufficient data | ND = no data | max = maximum
State Standard = California Ambient Air Quality Standard
National Standard = National Ambient Air Quality Standard

(1) The CARB does not report the 1-hour average carbon monoxide measurements. The 1-hour average was estimated by

Air Pollutant, Location	Averaging Time	Item	2008	2009	2010
dividing the 8-hour average by a consistency factor of 0.7. (UCD 1997) (2) To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010). The current 3-year average of the 98th percentile at Visalia monitoring station is 0.061 ppm. Therefore, the area did not exceed the standard during the three-year period. (3) To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.075 ppm (effective August 23, 2010). The current 3-year average of the 99th percentile at the Fresno monitoring station is 0.007 ppm. Therefore, the area did not exceed the standard during the three-year period. (4) SO_2 background values provided by SJVAPCD Sources: California Air Resources Board (CARB 2010b).					

The EPA and the CARB designate air basins where ambient air quality standards are exceeded as "non-attainment" areas. If standards are met, the area is designated as an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." National non-attainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards. Each standard has a different definition, or 'form' of what constitutes attainment, based on specific air quality statistics. For example, the Federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring values exceeds the threshold per year. In contrast, the Federal annual $PM_{2.5}$ standard is met if the three-year average of the annual average $PM_{2.5}$ concentration is less than or equal to the standard.

The current attainment designations for the basin are shown in Table 4. The basin is designated as non-attainment for the State ozone, PM_{10}, and $PM_{2.5}$ standards and the national ozone and $PM_{2.5}$ standards.

Table 4: San Joaquin Valley Air Basin Attainment Status

Pollutant	Designation	
	National	State
Ozone –1-hour	No Designation	Nonattainment/Severe
Ozone – 8-hour	Nonattainment/Extreme	Nonattainment
PM_{10}	Attainment-Maintenance	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
Carbon Monoxide	Attainment/Unclassified	Attainment
Nitrogen Dioxide	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead	Attainment/Unclassified	Attainment
Hydrogen Sulfide	No Designation	Unclassified
Sulfates	No Designation	Attainment
Visibility Reducing Particles	No Designation	Unclassified
Vinyl Chloride	No Designation	Unclassified

Pollutant	Designation	
	National	State
Source: CARB 2010c.		

2.2.3 - Sensitive Receptors

Those individuals who are sensitive to air pollution include children, the elderly, and persons with preexisting respiratory or cardiovascular illness. The SJVAPCD considers a sensitive receptor to be a location that houses or attracts children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Examples of sensitive receptors include hospitals, residences, convalescent facilities, and schools.

The closest sensitive receptors to the Project are a number of residences located to the north of the Project across Springville Avenue, to the west across Indiana Street, and to the south across State Route 190. The principal focus of this assessment was determining air quality and health risk impacts at the maximally impacted sensitive receptors.

SECTION 3: ASSESSMENT OF CRITERIA POLLUTANT OPERATIONAL IMPACTS

This section assesses the potential Project-level and cumulative criteria pollutant air quality impacts resulting from the operation of the Project's emission sources and emissions from sources adjacent to the Project.

3.1 - Methodology

The estimation of criteria pollutant impacts require the completion of four basic steps:

1. Estimation of emissions from sources that could impact air quality;
2. Application of an air dispersion model and attendant meteorological data to describe the rate of transport and magnitude of the air quality impacts of the estimated emissions;
3. Identification of receptor locations surrounding the emission source(s) where the air quality impacts are calculated; and
4. Comparison of the resulting air quality impacts with the relevant significance criteria

Each of these steps is described below.

3.1.1 - Estimation of Criteria Pollutant Emissions

The criteria pollutants analyzed in this report include CO, NO_2, SO_2, and PM_{10} and $PM_{2.5}$. These emissions result from a myriad of sources including principally mobile sources and secondarily from the combustion of natural gas for air and water heating. The emission sources included in this assessment are described in Sections 3.2.2 and 3.3.2 below.

3.1.2 - Air Dispersion Model

In accordance with guidance from the SJVAPCD (SJVAPCD 2010), the assessment of air quality impacts from pollutant emissions applied the U.S. EPA AERMOD Model. AERMOD represents a major scientific improvement over the ISC model that was previously recommended by the U.S. EPA for air quality assessments. AERMOD predicts pollutant concentrations from point, area, volume, line, and flare sources with variable emissions in terrain from flat to complex with the inclusion of building downwash effects from buildings on pollutant dispersion. It captures the essential atmospheric physical processes and provides reasonable estimates over a wide range of meteorological conditions and modeling scenarios.

It should be noted that the calculation of NO_2 concentrations made use of the Ozone Limiting Method (OLM) contained within the AERMOD model. A small amount of NO_2 is emitted directly into the atmosphere from the combustion of nitrogen contained in the fuel combustion process. However, NO_2 is also formed in the atmosphere by atmospheric chemical reactions involving nitric oxide, ozone, and reactive hydrocarbons. The concentration of nitrogen dioxide increases as the distance from the source increases, but only to a certain point, since dispersion also dilutes the concentrations. The Ozone Limiting Method was used in the AERMOD model to convert the NO_X emissions to nitrogen dioxide based on the distance from the source to the receptor and background ozone concentrations. For this purpose, hourly ozone data from the Visalia air monitoring station were used in the NO_2 assessment.

General Model Assumptions

The basic options used in the dispersion modeling are summarized in Table 5.

Table 5: General Modeling Assumptions

Feature	Option Selected
Terrain processing	Flat terrain
Emission source configuration	See Table 9 and Table 15 below
Regulatory Dispersion Options	OLM, Fast Processing
Land Use	Urban
Coordinate System	UTM
Building downwash	Included in Calculations
Receptor height	0 meters

As indicated in Table 5, the effects of building downwash on the dispersion of emissions from the Project buildings were accounted for. Building downwash occurs when the aerodynamic turbulence, induced by nearby buildings, causes pollutants emitted from an elevated source to be mixed rapidly toward the ground (referred to as downwash). This results in potentially higher ground-level concentrations than if the buildings were not present owing to the downward mixing of emissions resulting from wind turbulence in the leeward side of the building. The AERMOD dispersion model contains algorithms to account for building downwash effects. The required information includes the location of the emission source, location of adjacent buildings, and the building geometry in terms of length, width, and height. For purposes of this analysis, the emission source and building locations and geometries were taken from the Project site plan. The Walmart store was assumed to be 35 feet in height and the buildings on the remaining pads were assumed to be 25 feet in height.

Meteorological Data

Hourly meteorological data are also required to operate the AERMOD model to determine the direction and rate of dispersion of emissions released into the atmosphere. The SJVAPCD has prepared meteorological data sets covering the period 2005-2009 for several locations within the SJVAPCD that can be used as input to the AERMOD model. These data sets include items such as wind direction and speed, air temperature, surface roughness, albedo, Bowen Ratio, and vertical temperature structure of the lower atmosphere. The SJVAPCD meteorological data set closest to the

Project site is from the Porterville Airport located approximately 2.4 miles southwest of the Project site. These meteorological data are considered representative of the Project site and were used in this assessment. Valid meteorological data are available from the Porterville Airport for the five-year time period of 2005 to 2009. The air dispersion model was run individually for each of the five years of valid meteorological data to identify the highest criteria pollutant impacts.

3.1.3 - Receptor Network

The assessment also requires the specification of a network of receptors such that the impacts can be computed at the various locations within the network. The locations of the receptors use in the modeling analysis are shown in Exhibit 6 and include the sensitive receptors located adjacent to the Project. .

3.2 - Project-Level Criteria Pollutant Impact Assessment

3.2.1 - Project-Level Criteria Pollutant Significance Thresholds

The goal of significance thresholds is to ensure that no source creates, or receptor endures, a significant adverse impact from any individual project. The thresholds for Project-level criteria pollutants and health risks are intended to apply to all sources of emissions, including both permitted stationary sources and on- and off-road mobile sources, such as sources related to busy roadways.

A threshold of significance is "an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant" (CEQA Guidelines §15064.7(a)). Indeed, the use of Project-level significance thresholds is the methodology adopted by the several air districts including the SJVAPCD, Bay Area Air Quality Management District (BAAQMD) and the South Coast Air Quality Management District.

The SJVAPCD recommends air pollution thresholds that can be used by Lead Agencies in determining whether a proposed project could result in a significant air quality and health risk impacts. These thresholds are designed to ensure that an individual new source does not contribute to, or cause a violation of an ambient air quality standard or expose sensitive receptors to substantial levels of air pollution. The values of the individual significance thresholds have been defined based on scientific research and studies by the CARB and USEPA and are protective of public health. If a project has the potential to exceed any adopted significance threshold, then the project should be considered significant.

In the absence of a relevant significance threshold recommended by an expert commenting agency,

Air Dispersion Model Receptor Locations

Michael Brandman Associates

NORTH

21700005 • 5/2011 | 6_receptorsw.mxd

Exhibit 6

Air Dispersion Model Receptor Locations

CEI ENGINEERING ASSOCIATES, INC. • RIVERWALK MARKETPLACE PHASE II

AIR QUALITY AND HEALTH RISK ASSESSMENT

CEQA Guidelines Section 15064.7 provides that lead agencies are encouraged to adopt and/or apply "thresholds of significance". The Project-level significance thresholds adopted for this analysis are discussed below.

Since the SJVAB is presently in attainment of federal and State ambient air quality standards for nitrogen dioxide (NO_2, a component of NO_X), sulfur dioxide (SO_2), and carbon monoxide (CO), the significance thresholds are defined as the most restrictive ambient air quality standards for these pollutants. A significant impact would result if the change in the NO_2, SO_2, or CO pollutant impacts from the addition of the Project plus the background concentrations of these pollutants contributed by other local and regional emission sources exceeds the most restrictive ambient air quality standards.

The significance thresholds identified for PM_{10} and $PM_{2.5}$ require a different characterization. Although the SJVAB has not violated the national AAQS for PM_{10} in the past five years, it has violated the State standard for PM_{10} during the past several years. The SJVAC also exceeds both the national and State $PM_{2.5}$ air standards. For pollutants where the air basin is classified as non attainment under either the federal or State ambient air quality standards such as in the SJVAB for PM_{10} and $PM_{2.5}$, the significance approach accepted by local, State, and federal air agencies is to identify a SIL based on a level of increase determined to be de minimus by the US Environmental Protection Agency (EPA). CEQA case law (Kings County Farm Bureau vs. the City of Hanford) established that the threshold in this case is not one additional molecule (or particle), which would require an EIR for any new development while the area was in non-attainment. The ruling stated "The relevant question to be addressed in the EIR is not the relative amount of precursors emitted by the project when compared with preexisting emissions, but whether any additional amount of precursor emissions should be considered significant in light of the serious nature of the ozone problems in this air basin". Therefore, for purposes of this assessment, the USEPA significant impact levels (SILs) contained in Title 40, Part 51, (51.165(b)(2)) of the Code of Federal Regulations were adopted to assess the significance of the change in particulate matter impacts from the Project. SILs are a screening tool used to determine whether a proposed source's emissions will have a significant impact on air quality. If an individual project's impacts are less than the corresponding SIL, its impact is said to be de minimus. SILs are also used to determine whether a proposed source's impact on an existing violation of a standard is significant enough that it is considered to "cause or contribute to" the violation. In October 2011, the SJVAPCD adopted significance thresholds for PM_{10} and $PM_{2.5}$. (SJVAPCD 2011) based on the federal Significant Impact Levels (SILs) for these pollutants.

The criteria pollutant significance thresholds applied in this assessment are summarized in Table 6. A significant impact would occur if the change in any pollutant exceeds the appropriate significance threshold.

Table 6: Criteria Pollutant Significance Threshold Summary

Pollutant	Criteria Pollutant Air Concentration Threshold	Regulatory Authority
CO	20 ppm (1-hour) 9 ppm (8-hour)	State Standard State/National Standard
NO_2	0.10 ppm (3-year average of the 98th percentile of maximum daily 1-hour average). 0.18 ppm (1-hour) 0.03 ppm (annual)	National Standard State Standard State Standard
PM_{10}	5 µg/m^3 (24-hour) 1 µg/m^3 (annual)	EPA 40 CFR Parts 51 and 52 (SIL) EPA 40 CFR Parts 51 and 52 (SIL)
$PM_{2.5}$ (1)	1.2 µg/m^3 (24-hour) 0.3 µg/m^3 (annual)	EPA 40 CFR Parts 51 and 52 (SIL) EPA 40 CFR Parts 51 and 52 (SIL)
SO_2	0.25 ppm (1-hour) 0.075 ppm (3-year avg. of the 99th percentile of the maximum daily 1-hour avg.) 0.50 ppm (3-hour average) 0.04 ppm (24-hour average) 0.03 ppm (annual)	State Standard National Standard National Standard State Standard State Standard

Note:
(1) Based on the SJVAPCD procedures for modeling for a minor source of $PM_{2.5}$ (SJVAPCD 2011a) which does not require the modeling of secondary $PM_{2.5}$..

3.2.2 - Project-Level Criteria Pollutant Emission Estimates

The criteria pollutants analyzed in this assessment include CO, NO_2, SO_2, and PM_{10} and $PM_{2.5}$.

Emission Source Estimates

The first requirement to carryout the analysis involves the process of identifying and quantifying the sources of air emissions from the Project, also termed an emission inventory. Each piece of equipment that emits is identified as to location and physical characteristics (release height, release temperature, etc.) as well as the chemical nature and amount of the emissions. In this regard, it is relevant to note the SJVAPCD's policy that a project-level air quality impact analyses does not require the inclusion of emissions from customer vehicles traveling through a project or in the parking lots or emissions from project vehicle travel along any roadways outside the project boundaries. Furthermore, the analysis does not need to perform a cumulative analysis (Reed, SJVAPCD 2011b). However, to provide a comprehensive assessment of all sources of Project-level emissions, the following emission source were identified and analyzed in connection with the operation of the Project:

- Heavy duty diesel truck exhaust emissions while traveling within the Project site;
- Heavy duty diesel truck exhaust emissions while traveling along nearby roadways away from the Project;
- Heavy duty diesel truck idling emissions while loading or unloading goods at loading docks;

- The operation of transport refrigeration units on trucks transporting perishable goods;
- Customer and small delivery truck exhaust emissions while traveling within the parking lot;
- Customer and small delivery truck exhaust emissions while traveling along nearby roadways away from the Project;
- Emissions from natural gas usage in building operations

Mobile Source Emissions

The estimation of mobile source emissions requires the specification of several key pieces of information including the number of vehicle trips by vehicle type, trip travel lengths, vehicle idling time, and emission factors that define the amount of emissions as a function of vehicle speed and distance traveled or amount of idling time per vehicle.

Pollutant emissions from the various mobile sources were calculated using information derived from the Project description, Project traffic study (Ruettgers & Schuler 2010), and mobile source emission factors from the CARB EMFAC2007 emissions factor model (CARB 2006). Vehicle trip link distances for travel onsite were determined from the Project site plan as the distances from the entrance off Springville Avenue to the loading and delivery area at the north end of the Walmart store and from the closest entrances to the other development pads. Vehicular travel away from the Project was assumed to occur along Springville Avenue, Jaye Street, Indiana Street, and State Route 190.

The Project was assumed to commence operation in 2012 in keeping with the assumptions contained in traffic impact study. Vehicle travel speeds while traveling onsite were assumed 15 miles per hour for truck traffic and 10 mph for customer and small delivery truck traffic within the parking lot. All diesel delivery trucks were assumed to idle onsite for 15 minutes per day. Travel speeds offsite varied from 25 mph to 55 mph depending on the location of the travel route and vehicle class.

Table 7 provides an inventory of the operational vehicles for the Project (Walmart and associated retail pads). Note that in calculating the local impacts for NO_2, CO and SO_2, an estimate of peak hour vehicle trips was derived since several significance thresholds are based on 1-hour, 3-hour, or 8-hour averaging times. The local impacts for PM_{10} and $PM_{2.5,}$ which are based on 24-hour and annual averages applied the daily vehicle trip estimates

.

Table 7: Inventory of Project Vehicle Trips During Operations

Pollutant	Vehicle Class[(1)]	Number of Vehicles (vehicles per hour)
NO_2, CO, and SO_2 (for estimating impacts over time periods of 1-hour, 3-hour, and 8-hours)	2 axle truck (without TRU) 4+ axle truck (without TRU) 4+ axle truck (with TRU) LDA+LDT+MDT	5 2 2 788

Pollutant	Vehicle Class(1)	Number of Vehicles (vehicles per day)
PM_{10}, $PM_{2.5}$, NO_2 (for estimating impacts over time periods of 24-hour and annual)	2 axle truck (without TRU) 4+ axle truck (without TRU) 4+ axle truck (with TRU) LDA+LDT+MDT	13 6 2 8440

Notes:
(1) Walmart: 2 axle vehicles are represented by the EMFAC medium heavy duty vehicle class (MHDT); 4+ axle vehicles are represented by the EMFAC heavy-heavy duty (HHDT) vehicle class;
Other Pads: 2 axle vehicles are represented by the EMFAC light heavy duty vehicle class (LHDT2)
All heavy duty vehicles are assumed to be diesel-fueled
LDA = light duty automobiles LDT = light duty trucks MDT = medium duty trucks
TRU = transport refrigeration unit
Source: see Appendix A for the emission calculations

Table 8 provides a summary of the emission factors used to compute the mobile source emissions for NO_x, CO, SO_2, PM_{10}, and $PM_{2.5}$, respectively. The emission factors for the all vehicles except the Walmart 4+axle trucks are based on the EMFAC2007 model default fleet years that encompass the time period 1968 to 2012. The emission factors for the Walmart 4+axle trucks are based on the use of model year 2007 trucks in keeping with Walmart's commitment of using trucks that are no older than 5 years old (SJVAPCD 2009). Also shown are the emission factors for the transport refrigeration units.

Table 8: Mobile Source Criteria Pollutant Emission Factors for Project Vehicles

Diesel Truck Exhaust Emission Factors(1)	NO_x (g/mi)	CO (g/mi)	SO_x (g/mi)	PM_{10}(2) (g/mi)	$PM_{2.5}$(2) (g/mi)
4+axle truck (HHDT)					
15 mph	10.63	2.45	0.03	0.14	0.09
25 mph	7.80	1.62	0.02	0.13	0.08
35 mph	6.46	1.54	0.02	0.13	0.09
2 axle truck (MHDT)					
15 mph	7.80	3.84	0.01	0.48	0.43
25 mph	6.41	2.30	0.01	0.34	0.30
35 mph	6.07	1.64	0.01	0.26	0.23
2 axle truck (LHDT2)					
15 mph	4.80	1.54	0.01	0.10	0.08
25 mph	3.95	0.92	0.01	0.08	0.06
35 mph	3.74	0.66	0.01	0.06	0.04
Diesel Truck Idle Emission Factors	**NO_x (g/hr)**	**CO (g/hr)**	**SO_x (g/hr)**	**PM_{10} (g/hr)**	**$PM_{2.5}$ (g/hr)**
4+ axle truck (HHDT)	122.65	43.69	0.06	0.11	0.10
2 axle truck (MHDT)	75.05	26.30	0.04	1.15	1.06
2 axle truck (LHDT2)	75.05	26.30	0.04	0.92	0.84
TRU Emission Factors(3)	**NO_x (g/hp-hr)**	**CO (g/hp-hr)**	**SO_x (g/hp-hr)**	**PM_{10} (g/hp-hr)**	**$PM_{2.5}$ (g/hp-hr)**
TRU Exhaust + Idle	4.52	4.16	0.01	0.23	0.23

Customer/Small Delivery Trucks Composite Emission Factors	NO_x (g/mi)	CO (g/mi)	SO_x (g/mi)	PM_{10}(2) (g/mi)	$PM_{2.5}$(2) (g/mi)
10 mph	0.41	3.91	0.007	0.07	0.06
35 mph	0.27	2.37	0.003	0.04	0.02
55 mph	0.27	1.92	0.003	0.03	0.02

Notes:
(1) 4+ axle vehicle factors are for Walmart trucks assuming a model year 2007. All other emission factors based on the fleet of 1968 to 2012 vehicles
(2) PM_{10} and $PM_{2.5}$ exhaust emission factors include brake and tire wear
(3) TRU emission factors based on fleet average for Tulare County in 2012 from CARB OFFROAD model
LHDT2 – light heavy duty truck MHDT – medium heavy duty trucks HHDT = heavy-heavy duty trucks
Source: see Appendix A

Natural Gas Emissions

The operation of the various buildings would also emit pollutants resulting from the combustion of natural gas for water and air heating. The natural gas emissions were estimated from the URBEMIS land use emission model based on land use and the relative size of the various buildings.

Emission Source Characterization

Each of the emission source types described above also requires geometrical and emission release specifications for use in the air dispersion model. Table 9 provides a summary of the assumptions used to configure the various emissions. By way of explanation, the following definitions are used in defining the emission source geometrical configurations referred to in Table 9:

- Point source: a single identifiable local source of emissions; it is approximated in the air dispersion model as a mathematical point in the modeling region with a location and emission characteristics such as height of release, temperature, etc. (Example: a stack or vent);
- Line source: a series of volume sources along a path (Example: vehicular traffic along a street or within the Project).
- Area source: a large area over which emissions are uniformly distributed (Example: a parking lot)

Table 9: Summary of Emission Source Configurations

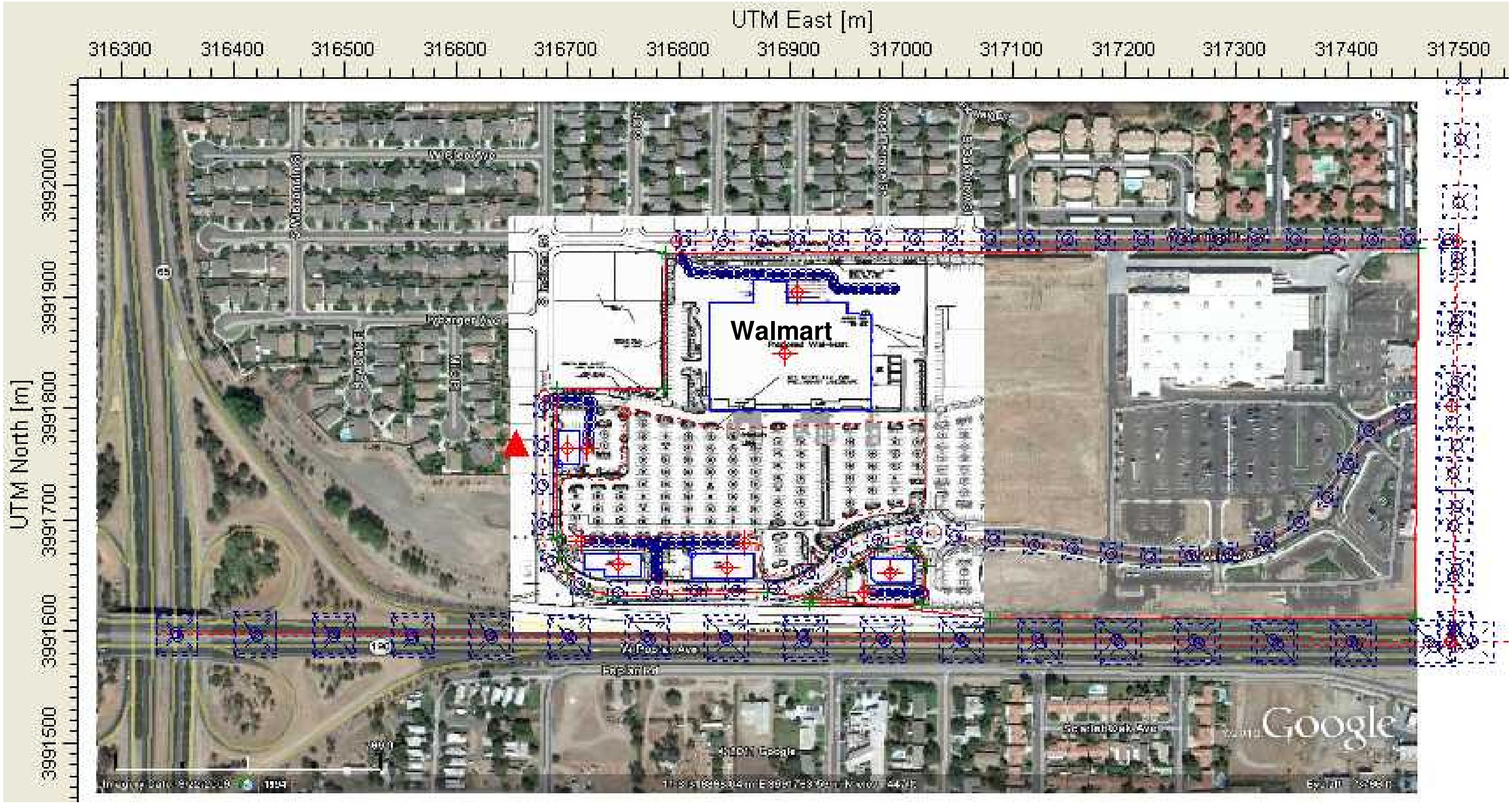
Emission Source Type	Geometric Configuration	Relevant Assumptions
Onsite Diesel Truck Traffic	Line Sources	• See Table 7 for an inventory of truck operations • Stack release height: 6 feet • Vehicle Speed: 15 mph • Length of the line source (distance from the facility entrance on Springville Ave to the loading docks at the Walmart store and from the nearest entrance to the remaining pads • Vehicle types: LHDT2, MHDT, and HHDT diesel delivery trucks • Emission factors: CARB EMFAC2007

Emission Source Type	Geometric Configuration	Relevant Assumptions
Onsite Diesel Truck Idling	Point Sources located at the loading docks	• Stack release height: 12 feet • Stack release characteristics > Stack diameter: 0.3 feet > Stack velocity: 170 feet/sec > Stack temperature: 200° F • Idle time: 15 minutes per truck per day • Vehicle types: LHDT2, MHDT, and HHDT diesel delivery trucks • Emission factors: CARB EMFAC2007
Onsite Diesel Truck TRU	Point Source at the Walmart loading dock; line source while traveling onsite	• Stack release height: 12 feet • TRU Size: 34 horsepower (typical size) • Load factor: 53% • Emission factors: TRU emission factors based fleet average for Tulare County in 2012 from CARB OFFROAD model • See Table 7 for heavy duty truck TRU usage
Natural Gas Emissions	Point source at each building	• Emissions based on URBEMIS model and land use and square footage of each building • Stack placed 5 feet above roof level
Offsite Vehicle Traffic	Line Sources along Springville Avenue, Jaye St, Indiana St, and SR190	• Offsite travel based on trip distribution as derived from the traffic impact study • Vehicle speeds dependent on vehicle class and roadway and ranged from 25 mph to 55 mph • Includes emissions from TRUs while in operation
Parking Lot	Area Source located south of the Walmart building	• Total area: approximately 30,000 square meters • Vehicle speed: 10 mph • Vehicles: LDA, LDT, and MDT • Daily vehicle tripe: 8,440 • Max hourly trips: 788
Facility Operations	Project	• 24 hours per day/365 days per year
Source: see Appendix A for the emission details		

Exhibit 7 provides the locations of the various emission sources.

3.2.3 - Project-Level Criteria Pollutant Assessment Results

Table 10 summarizes the results of the criteria pollutant impact assessment from the operation of the Project. Shown therein are the impacts at the maximally impacted sensitive receptor along with a comparison of Project impacts with the applicable air quality significance thresholds for NO_2, CO, SO_2 for the build-out year of 2012. Table 11 provides a summary of impacts for PM_{10} and $PM_{2.5}$ at the maximally impacted sensitive receptor along with a comparison with the PM_{10} and $PM_{2.5}$ significance thresholds for the 2012 build-out year.



Point Sources: Truck Idling /TRU and Natural Gas Emissions

Vehicle Travel Routes

Parking Lot

Michael Brandman Associates

NORTH

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Exhibit 7
Location of Project-Level Emission Sources

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AIR QUALITY AND HEALTH RISK ASSESSMENT

Table 10: Project Air Quality Impacts for CO, NO_2, and SO_2

Pollutant	Averaging Time	Background Air Quality(1) (ppm)	Project Impact(2) (ppm)	Background + Project Impact (ppm)	Significance Threshold(3) (ppm)	Exceeds Threshold?
CO	1 Hour(4)	3.1	0.08	3.18	20.0	No
	8 Hour	2.2	0.07	2.27	9.0	No
NO_2	1-hour(5)	0.077	0.038	0.115	0.18	No
	1 Hour(6)	0.057	0.036	0.093	0.10	No
	Annual	0.015	<0.001	0.015	0.030	No
SO_2	1-hour(5)	0.060	<0.001	0.060	0.25	No
	1-hour(7)	0.007	<0.001	0.007	0.075	No
	3-hour	0.050	<0.001	0.050	0.50	No
	24-hour	0.007	<0.001	0.007	0.04	No
	Annual	0.001	<0.001	0.001	0.03	No

Notes:
(1) The highest concentrations measured during the most recent 3-year period of 2008 to 2010 (see Table 3) or from the percentile data collected by the SJVAPCD for NO_2 and SO_2
(2) The impacts noted under the column labeled "Project Impact" were determined as the highest impacts at any nearby sensitive receptor (residence) and do not include receptors that are located within parking lots, along the project fence line, vacant land, or roadways. The principal emphasis was on estimating impacts at locations where residences could be impacted
(3) Significance thresholds derived from Table 6
(4) 1-hour average background CO was derived by dividing the 8-hr average CO by 0.7 since the 1-hour average is not routinely reported by CARB (UCD 1997)
(5) 1-hour California State standard
(6) The background 1-hour NO_2 is the three-year average of the 98th percentile NO_2 concentrations at the air monitoring station in Visalia. The maximum incremental Project NO_2 1-hour impact is the 98^{th} percentile modeled NO_2 concentration using the Ozone Limiting Method to convert NO_x to NO_2
(7) The background 1-hour SO_2 is the three-year average of the 99^{th} percentile SO_2 concentrations at the air monitoring station in Fresno. The maximum incremental project SO_2 1-hour impact is the 99th percentile modeled SO_2 concentration.
Source: Appendix B

Table 11: Project Air Quality Impacts for PM_{10} and $PM_{2.5}$

Pollutant	Averaging Time	Project Impact(1) (µg/m³)	EPA SIL Significance Threshold(2) (µg/m³)	Exceed Thresholds ?
PM_{10}	24 Hour	0.33 $\mu g/m^3$	5	No
	Annual	0.09 $\mu g/m^3$	1	No
$PM_{2.5}$	24 Hour	0.22 $\mu g/m^3$	1.2	No
	Annual	0.05 $\mu g/m^3$	0.3	No

Notes:
PM_{10} and $PM_{2.5}$ = particulate matter; $\mu g/m^3$ = micrograms per cubic meter (a unit of concentration);
(1) The impacts noted under the column labeled "Project Impact" were determined as the highest impacts at any nearby

Pollutant	Averaging Time	Project Impact[(1)] (µg/m^3)	EPA SIL Significance Threshold[(2)] (µg/m^3)	Exceed Thresholds ?
sensitive receptor (residence) and do not include receptors that are located within parking lots, along the project fence line, vacant land, or roadways. The principal emphasis was on estimating impacts at locations where residences could be impacted (2) EPA SIL = Title 40, Part 51, (51.165(b)(2)) of the Code of Federal Regulations and SJVAPCD 2011a Source: See Appendix B				

The results summarized in Table 10 and Table 11 indicate that the impacts from the operation of the Project including the applicable background pollutant levels would not exceed the applicable significance thresholds for NO_2, CO, and SO_2, and would not exceed the significance thresholds for PM_{10} and $PM_{2.5.}$ The highest air quality concentrations of CO, NO_2, and SO_2 were found to occur within the residential areas to the north of the Project across Springville Avenue while the highest impacts for PM_{10} and $PM_{2.5}$ were found in the residential areas to the west of the project across Indiana Street.

3.3 - Cumulative Impact Assessment of Criteria Pollutants

An expanded air quality assessment was also performed to examine the cumulative impacts from the operation of the Project and other nearby sources of emissions. The cumulative criteria pollutant impact assessment included air emissions from the Project and the Riverwalk Marketplace Phase I due to its close proximity to the Project (adjacent to and east of the Project). Criteria pollutant emissions from other nearby sources of emissions are included in the “background” pollutant levels, which are added to the cumulative impacts from the Project and Riverwalk Marketplace Phase I.

3.3.1 - Cumulative Criteria Pollutant Impact Significance Thresholds

The criteria significance thresholds identified in Table 6: Criteria Pollutant Significance Threshold Summary applicable to the project-level assessment were also applied in the cumulative assessment. The use of these thresholds from a cumulative perspective provides a conservative impact determination since the impacts from the currently operation development pads of Phase I (Lowes store and 3 retail pads) are already a part of the background and thereby results in a double counting of the Phase I emission impacts as being part of the baseline and cumulative conditions.

3.3.2 - Cumulative Criteria Pollutant Emission Source Estimates

As noted above, the focus was on assessing the cumulative criteria pollutant impacts from the operation of the Project and the Riverwalk Marketplace Phase I, which is located immediately adjacent to and east of the Project. The Riverwalk Marketplace Phase I consists of 20 retail/commercial pads anchored by a Lowes Home Improvement Store (State Clearing House No. 2004091116, May 2006).

An inventory of the various buildings that comprise Phase I is provided in Table 12.

Table 12: Phase I Building Development

Land Use	Building Size[1] (square feet)
Lowes [2]	139,410
Major B	37,000
Major C	41,000
Major D	45,000
Pad 1	4,500
Pad 2	5,800
Pad 3 [2]	3,729
Pad F [2]	9,000
Pad 4 [2]	3,750
Pad 5	9,270
Pad 6	5,480
Pad 7	3,750
Pad 8	2,040
Pad 9	3,000
Pad 10	3,000
Pad 11	5,000
Pad 12	5,600
Pad G	10,800
Pad H	12,200
Pad J	10,000
Total	359,329

Note:
(1) Pad sizes derived from Porterville Riverwalk Marketplace Commercial Center Project (Quad-Knoff 2006)
[2] Only pads currently in operation as of June 2011

It should be noted that currently, the only development pads in operation within Phase I are the Lowes Home Improvement Store and three restaurants. The remaining sixteen pads are currently vacant and it is unknown when these pads will be developed or what type of development will take place on each pad (e.g., retail store, bank, or restaurant, etc.) (Grubb and Ellis 2011).

Because of the uncertainty in determining the future development of Phase I, this assessment made the following three key assumptions to represent a worst-case cumulative impact analysis:

1. All development pads for both Phase I and the Project are assumed to be built and in operation in 2012, the build out year for the Project.

2. All development pads in Phase I with the exception of the Lowes store, and retail pads B, C, D, G, H, and J were assumed to be comprised of fast food restaurants (to maximize the emissions from the TRUs and TACs from restaurant cooking);

3. To estimate the highest 1-hour average impacts, it was assumed that deliveries to all development pads occurs at the same time (e.g., the delivery trucks will visit each pad simultaneously within the same hour in both Phase I and the Project)

The application of the above assumptions will result in a worst-case analysis for the following reasons.

1. Given the uncertainty in the development of Phase I, it is highly unlikely that the entirety of Phase I and the Project would be fully operational in 2012; it is more likely that the development will proceed over a number of years. The rate of development is essentially driven by market demand and favorable economic conditions. The year 2012 was used as the basis for the expanded assessment because mobile source emissions particularly from heavy-duty trucks and TRUs will be higher in 2012 than in future years due to the need to comply with CARB-adopted emission regulations that apply to these emission sources.

2. Assuming all remaining undeveloped non-retail pads in Phase I as restaurant pads maximizes the potential impacts resulting from the operation of heavy duty trucks equipped with TRUs, which are a major source of emissions as well as the emissions associated with restaurant meat cooking. In fact, discussions with the Phase I real estate management company (Grubb and Ellis 2011) have indicated that at least two of the remaining undeveloped Phase I parcels may be developed as a bank, thereby eliminating the use of a TRU for these pads.

3. It is highly unlikely that every pad in both the Project and Phase I would be visited by delivery vehicles in the same hour on any given day. More than likely the delivery trucks would not, for instance, make daily trips to the restaurant pads but would most only visit their respective businesses perhaps only a couple of times per week. Deliveries would also vary throughout the day depending on the particular pad. Since it is unknown at this time the exact delivery schedules, use of this assumption will maximize potential impacts for NO_2 and CO.

4. Finally, the SJVAPCD CEQA policy guidance does not allow for the incorporation of substantial future emission reductions from mandated emission reduction measures and regulations adopted by the CARB including the State Truck and Bus Regulation (CARB 2011), and the Transport Refrigeration Unit Air Toxic Control Measure (CARB 2011); both regulations will result in significant emission reductions from heavy duty trucks and TRUs over the next 5 to 10 years compared to the 2012 build out year emission levels (see Section 4.4.2 below).

Taken together, the above assumptions will result in overestimates of potential criteria pollutant impacts from the combined operational impacts from Phase I and the Project.

This criteria pollutant cumulative impact analysis includes the following emission sources in providing a cumulative estimates of air quality impacts:

- The Project's heavy duty trucks and TRUs while operating and idling onsite and traveling on local roadways away from the Project site;
- The Phase I heavy duty trucks and TRUs including the Lowes store and all retail pads while operating and idling onsite and away from the Phase I buildings on local roadways;
- Customer vehicles, small delivery trucks, and heavy duty delivery trucks as they travel away from and to the Project and Phase I buildings along local travel routes;
- Customer vehicles and small delivery trucks as they travel within the parking lots of the Project and the Phase I buildings; and
- Emissions from the combustion of natural gas in all buildings

The criteria pollutant emissions were estimated for the above emission sources using information from the Project description, description of the development of Phase I, traffic impact studies for both the Project and Phase I (Quad Knoff 2006), and emission factors derived from the EMFAC2007 mobile source emission model. Heavy-duty vehicle travel speeds while traveling within the two phases to the respective loading docks were assumed 15 miles per hour. Customer and small delivery trucks were assumed to travel at 10 mph within the parking lots. Vehicular travel away from the two phases on the nearby roadways were assumed to travel from 25 to 55 miles per hour depending on the vehicle type and offsite travel route. The offsite travel routes included travel on Springville Avenue, Jaye Street, Indiana Street, and SR 190. All heavy-duty diesel delivery trucks were assumed to idle onsite for 15 minutes. An inventory of the Phase I vehicular traffic based on typical vehicle frequency and use is provided in Table 13. The emission factors used in the assessment are provided in Table 14.

Table 13: Inventory of Vehicular Traffic – Riverwalk Marketplace Phase I

Land Use	Daily Vehicle Inventory (vehicles/day)	Peak Hour Vehicle Inventory (vehicles/hour)
Lowes [(2)]	15 HHDT, 20 MHDT[(1)]	3 HHDT, 2 MHDT
Major B	1 LHDT2	1 LHDT2
Major C	1 LHDT2	1 LHDT2
Major D	1 LHDT2	1 LHDT2
Pad 1	1 LHDT2 w/TRU	1 LHDT2 w/TRU
Pad 2	1 LHDT2 w/TRU	1 LHDT2 w/TRU

Pad 3 [(2)]	1 LHDT w/TRU	1 LHDT w/TRU
Pad F [(2)]	1 LHDT2 w/TRU	1 LHDT2 w/TRU
Pad 4 [(2)]	1 LHDT2 w/TRU	1 LHDT2 w/TRU
Pad 5	1 LHDT2 w/TRU	1 LHDT2 w/TRU
Pad 6	1 LHDT2 w/TRU	1 LHDT2 w/TRU
Pad 7	1 LHDT2 w/TRU	1 LHDT2 w/TRU
Pad 8	1 LHDT2 w/TRU	1 LHDT2 w/TRU
Pad 9	1 LHDT2 w/TRU	1 LHDT2 w/TRU
Pad 10	1 LHDT2 w/TRU	1 LHDT2 w/TRU
Pad 11	1 LHDT2 w/TRU	1 LHDT2 w/TRU
Pad 12	1 LHDT2 w/TRU	1 LHDT2 w/TRU
Pad G	1 LHDT2	1 LHDT2
Pad H	1 LHDT2	1 LHDT2
Pad J	1 LHDT2	1 LHDT2
Customer Vehicles	15,592 trips/day	1,456 trips/hour

Note:
(1) Daily vehicle estimate for Lowes Store derived from San Jose Lowes Store EIR (LSA 2006)
(2) Only pads currently in operation as of June 2011
TRU – Transport Refrigeration Unit
Source: Customer vehicle trips derived from Porterville Riverwalk Marketplace Commercial Project EIR (Quad-Knoff 2006)
Source: see Appendix C

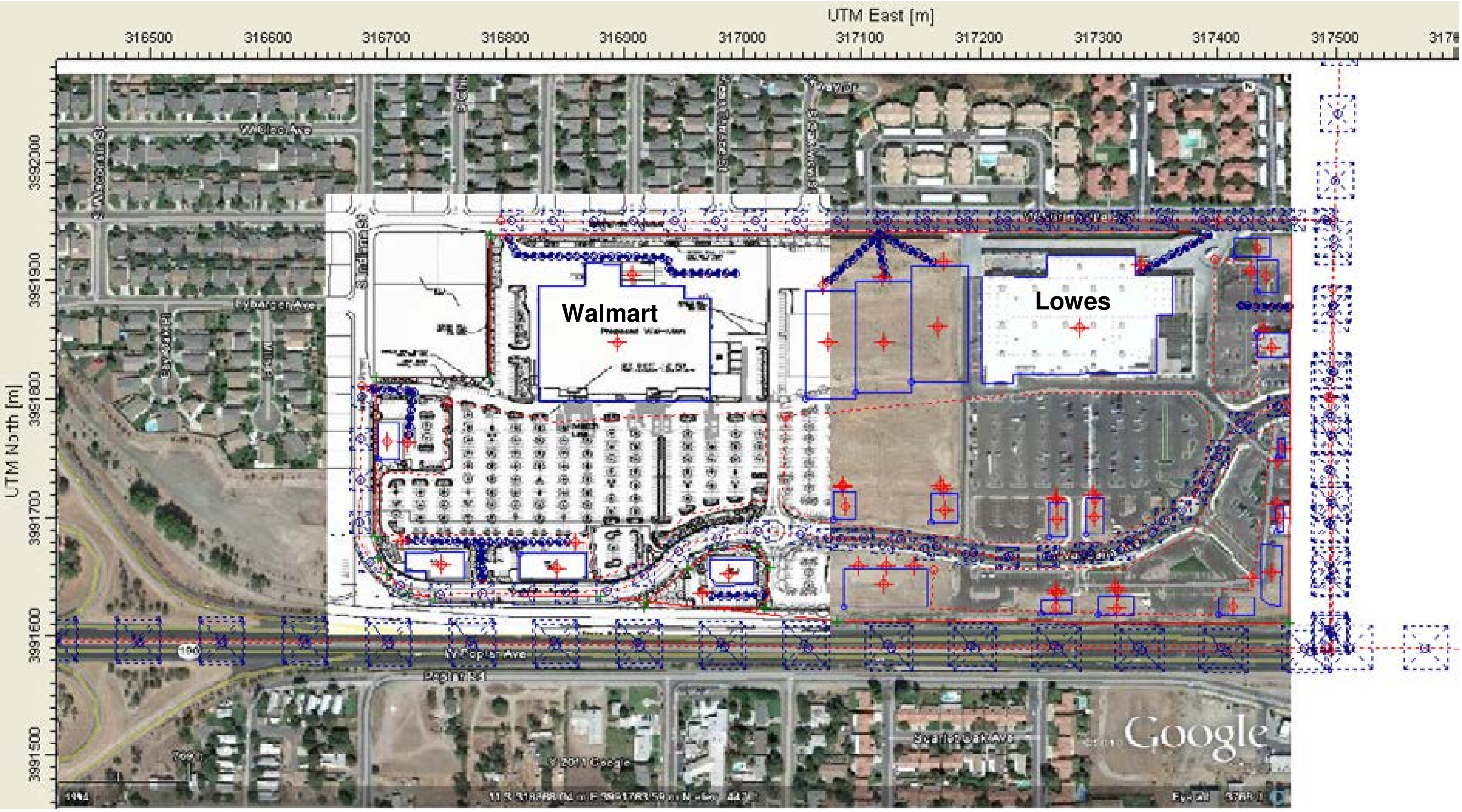
Table 14: Operational Emission Factors – Cumulative Analysis

Diesel Truck Exhaust Emission Factors[(1)]	NO_x (g/mi)	CO (g/mi)	SO_x (g/mi)	PM_{10}[(2)] (g/mi)	$PM_{2.5}$[(2)] (g/mi)
4+axle truck (HHDT)	Walmart/Others	Walmart/Others	Walmart/Others	Walmart/Others	Walmart/Others
15 mph	10.63/14.59	2.45/6.52	0.03/0.03	0.14/0.79	0.09/0.69
25 mph	7.80/11.76	1.62/4.16	0.02/0.02	0.13/0.50	0.08/0.41
35 mph	6.46/10.87	1.54/3.11	0.02/0.02	0.13/0.41	0.09/0.33
2 axle truck (MHDT)					
15 mph	7.80	3.84	0.01	0.48	0.43
25 mph	6.41	2.30	0.01	0.34	0.30
35 mph	6.07	1.64	0.01	0.26	0.23
2 axle truck (LHDT2)					
15 mph	4.80	1.54	0.01	0.10	0.08
25 mph	3.95	0.92	0.01	0.08	0.05
35 mph	3.74	0.66	0.01	0.06	0.04
Diesel Truck Idle Emission Factors	**NO_x (g/hr)**	**CO (g/hr)**	**SO_x (g/hr)**	**PM_{10} (g/hr)**	**$PM_{2.5}$ (g/hr)**
	Walmart/Others	Walmart/Others	Walmart/Others	Walmart/Others	Walmart/Others

4+ axle truck (HHDT) 2 axle truck (MHDT) 2 axle truck (LHDT2)	122.65/113.00 75.05 75.01	43.69/49.06 26.30 26.30	0.06/0.06 0.04 0.04	0.11/1.45 1.15 0.92	0.10/1.34 1.06 0.84
TRU Emission Factors[3]	**NO_x (g/hp-hr)**	**CO (g/hp-hr)**	**SO_x (g/hp-hr)**	**PM_{10} (g/hp-hr)**	**$PM_{2.5}$ (g/hp-hr)**
TRU Exhaust + Idle	4.52	4.16	0.01	0.23	0.23
Customer/Small Delivery Trucks Composite Emission Factors	**NO_x (g/mi)**	**CO (g/mi)**	**SO_x (g/mi)**	**PM_{10}[2] (g/mi)**	**$PM_{2.5}$[2] (g/mi)**
10 mph 35 mph 55 mph	0.41 0.27 0.27	3.91 2.37 1.92	0.01 <0.01 <0.01	0.07 0.04 0.03	0.06 0.02 0.02

Notes:
[1] 4+ axle vehicle factors for Walmart trucks assume a model year 2007. All other emission factors including the 4+ axle Lowes store trucks based on the fleet of 1968 to 2012 vehicles
[2] PM_{10} and $PM_{2.5}$ exhaust emission factors include brake and tire wear
[3] TRU emission factors based on fleet average for Tulare County in 2012 from CARB OFFROAD model
MHDT – medium heavy duty trucks HHDT = heavy-heavy duty trucks
Source: see Appendix C

Exhibit 8 provides a view of the emission sources included in the expanded assessment. Other relevant emission source parameters for this expanded analysis are provided in Table 15: Emission Parameters – Cumulative Criteria Pollutant Air Quality Analysis.



Point Sources: Truck Idling/TRU and Natural Gas Emissions

Vehicle Travel Routes

Parking Lot

Michael Brandman Associates

NORTH

Exhibit 8
Location of Criteria Pollutant Cumulative Emission Sources

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AIR QUALITY AND HEALTH RISK ASSESSMENT

Table 15: Emission Parameters – Cumulative Criteria Pollutant Air Quality Analysis

Emission Source Type	Geometric Configuration	Relevant Assumptions
Onsite Diesel Truck Traffic	Line Sources	• See Table 7 for the Project vehicle use • See Table 13for the Phase I vehicle usage • Stack release height: 6 feet • Vehicle Speed: 15 mph • Length of the line source (distance from the facility entrances on Springville Ave to the loading docks at the Lowes stores from the nearest entrance to the remaining pads • Emission factor: CARB EMFAC2007 for Tulare County o Model year 2007 for Walmart 4 axle trucks o Fleet years of 1968 to 2012 for all other vehicles
Onsite Diesel Truck Idling	Point Sources located at the loading docks	• See Table 7 for the Project vehicle use • See Table 13 for Phase I vehicle use • Stack release height: 12.6 feet • Stack release characteristics > Stack diameter: 0.3 feet > Stack velocity: 170 feet/sec > Stack temperature: 200° F • Idle time: 15 minutes per truck per day • Vehicle type: heavy-heavy duty, medium heavy duty, light heavy duty diesel delivery trucks • Emission factor: CARB EMFAC2007 for Tulare County o Model year 2007 for all Walmart 4 axle trucks o Fleet years 1968 to 2012 for all other vehicles
Onsite Diesel Truck TRU	Point Source at each retail pad; also includes emissions while traveling onsite	• See Table 13for the Phase I vehicle use • Stack release height: 13 feet • TRU Size: 34 horsepower (typical size) • Load factor: 53% • Emission factor: TRU emission factors based on fleet average in Tulare County in 2012 from CARB OFFROAD model • One TRU-equipped 2 axle truck assumed for each retail pad within Phase I (except the Lowes store and Pads B, C, D, G, H, and J retail pads)
Offsite Traffic	Line Sources	• See Table 7 for the Project vehicle use • See Table 13 for Phase I vehicle use • Several travel links from the Project and from the Phase I buildings to outlying areas were identified including Springville Avenue, Indiana Street, Jaye Street, and State Route 190 and emissions were estimated along each link • Includes TRU emissions while traveling offsite • Vehicle speeds: ranges from 25 mph to 55 mph depending on the travel link and vehicle class
Parking Lots	Area Source	• Size of the Project lots o Project: approximately 324,200 square feet o Existing Phase I: approximately 621,100 square

Emission Source Type	Geometric Configuration	Relevant Assumptions

		feet
		• Release height: 3.3 feet
		• Emission factors derived from EMFAC2007 for LDA, LDT, and MDT vehicles
		• Daily trips
		  o Project: 8,440 trips per day
		  o Phase I: 15,592 trips per day
		• Peak hour trips
		  o Project: 788 trips per hour
		  o Phase I: 1,456 trips per hour
		• Vehicle speed: 10 miles per hour

Natural Gas	Point Source at each building	• Emissions based on URBEMIS model and land use and square footage of each building • Stack placed 5 feet above roof level
Facility Operations	Existing Phase I	• 24 hours per day/365 days per year
Source: see Appendix D for the emission details		

3.3.3 - Cumulative Criteria Pollutant Impact Assessment Results

The AERMOD air dispersion model, receptor grid and meteorological data used to identify impacts for the Project impacts were applied in analyzing the impacts of the cumulative emission sources.

Table 16 summarizes the results for CO, NO_2, and SO_2 for the cumulative impacts at the maximum impacted sensitive receptor. Table 17 provides the results of the cumulative assessment for PM_{10} and $PM_{2.5}$.

Table 16: Air Quality Impacts for CO, NO_2, and SO_2- Cumulative Impacts

Pollutant	Averaging Time	Background Air Quality(1) (ppm)	Cumulative Impact(2) (ppm)	Background + Cumulative Impact (ppm)	Significance Threshold(3)	Exceeds Threshold ?
CO	1 Hour(4)	3.1	0.21	0.31	20.0	No
	8 Hour	2.2	0.10	0.23	9.0	No
NO_2	1-hour(5)	0.077	0.041	0.118	0.18	No
	1 Hour(6)	0.057	0.36	0.093	0.10	No
	Annual	0.015	<0.001	0.015	0.030	No
SO_2	1-hour(5)	0.060	<0.001	0.060	0.25	No
	1-hour(7)	0.007	<0.001	0.007	0.075	No
	3-hour	0.050	<0.001	0.050	0.50	No
	24-hour	0.007	<0.001	0.007	0.04	No
	Annual	0.001	<0.001	0.001	0.03	No

(1) The highest concentrations measured during the most recent 3-year period of 2007 to 2009 (see Table 3) or from the NO_2 data collected by the SJVAPCD for NO_2 and SO_2
(2) The impacts noted under the column labeled "Cumulative Impact" were determined as the highest impacts at any nearby sensitive receptor (residence) and do not include receptors that are located within parking lots, along the project fence line, vacant land, or roadways. The principal emphasis was on estimating impacts at locations where residences could be impacted
(3) Significance thresholds derived from Table 6: Criteria Pollutant Significance Threshold Summary
(4) 1-hour average background CO was derived by dividing the 8-hr average CO by 0.7 since the 1-hour average is not routinely reported by CARB (UCD 1997)
(5) 1-hour California State standard
(6) The background 1-hour NO_2 is the three-year average of the 98th percentile NO_2 concentrations at the air monitoring station in Visalia. The maximum incremental project NO_2 1-hour impact is the 98th percentile modeled NO_2 concentration using the Ozone Limiting Method to convert NO_x to NO_2
(7) The background 1-hour SO_2 is the three-year average of the 99th percentile SO_2 concentrations at the air monitoring station in Fresno. The maximum incremental project SO_2 1-hour impact is the 99th percentile modeled SO_2 concentration.
Source: Appendix D

Table 17: Air Quality Impacts for PM_{10} and $PM_{2.5}$ – Cumulative Impacts

Pollutant	Averaging Time	Cumulative Impact (µg/m^3)(1)	EPA SIL Significance Threshold(1) (µg/m^3)	Exceed Thresholds ?
PM_{10}	24 Hour	0.60 µg/m^3	5	No
	Annual	0.15 µg/m^3	1	No
$PM_{2.5}$	24 Hour	0.36 µg/m^3	1.2	No
	Annual	0.10 µg/m^3	0.3	No

Notes:
(1) The impacts noted under the column labeled "Cumulative Impact" were determined as the highest impacts at any nearby sensitive receptor (residence) and do not include receptors that are located within parking lots, along the project fence line, vacant land, or roadways. The principal emphasis was on estimating impacts at locations where residences could be impacted
(2) EPA SIL = Title 40, Part 51, (51.165(b)(2)) of the Code of Federal Regulations and SJVAPCD 2011a
PM_{10} and $PM_{2.5}$ = particulate matter; µg/m^3 = micrograms per cubic meter (a unit of concentration);
Source: See Appendix D

As noted from Table 16: Air Quality Impacts for CO, NO_2, and SO_2- Cumulative Impacts and Table 17, the cumulative assessment indicates that no significance thresholds would be exceeded due to the combined operation of the Project and Phase I even after allowing for the application of very conservative assessment assumptions.

SECTION 4: ASSESSMENT OF HEALTH RISK OPERATIONAL IMPACTS

A health risk assessment (HRA) is a guide that helps to determine if current or future exposures to a chemical or substance could affect the health of a population. The State of California Office of Environmental Health Hazard Assessment (OEHHA) develops methods for conducting health risk assessments. As defined under the Air Toxics "Hotspots" Information and Assessment Act of 1987 ["AB 2588" (Chapter 1252, Statutes of 1987), California Health and Safety Code Section 44306], "A health risk assessment means a detailed comprehensive analysis prepared pursuant to Section 44361 to evaluate and predict the dispersion of hazardous substances in the environment and the potential for exposure of human populations and to assess and quantify both the individual and population-wide health risks associated with those levels of exposure" (OEHHA 1987).

4.1 - Methodology

The HRA of toxic air contaminants requires one additional step beyond that for assessment the criteria pollutants. This step involves applying a risk characterization model to the results from the air dispersion model to estimate potential health risks at each sensitive receptor location. The operation of the Project would result in the release of diesel particulate matter (DPM) from the operation of diesel-powered vehicles and transport refrigeration units. Exposure to DPM has the potential to cause health risks in terms of excess risk of cancer and chronic non-cancer health effects. The most relevant health effects of DPM were discussed earlier in Table 2 above. The assessment methodology is discussed below.

4.1.1 - Cancer Health Risk Assessment Methodology

The cancer risk from DPM is calculated by multiplying the average DPM concentrations calculated using the AERMOD model and an inhalation exposure factor as in Equation 1 below (OEHHA 2003).

$$\text{Cancer Risk} = \text{Inhalation cancer potency factor} \times \text{Dose-inhalation} \qquad \text{(EQ-1)}$$

Where:

Cancer Risk = Total individual lifetime excess cancer risk defined as the cancer risk a hypothetical individual faces if exposed to carcinogenic emissions from a particular facility continuously, 24 hours/day, for a 70-year lifetime; this risk is defined as an excess risk because it is above and beyond the background cancer risk to the population contributed by emission sources not related to the Project; cancer risk is expressed in terms of risk per million exposed individuals.

Inhalation cancer potency factor (CPF) = 1.1 (milligrams per kilogram per day)$^{-1}$ for DPM; inhalation is the principal exposure pathway for cancer impacts for DPM

$$\text{Dose-inhalation} = C_{air} \times (DBR \times A \times EF \times ED \times 10^{-6} / AT) \qquad \text{(EQ-2)}$$

Where:

C_{air} = Average DPM concentrations calculated from the AERMOD model in $\mu g/m^3$
DBR = Daily breathing rate
A = Inhalation absorption factor
EF = Exposure frequency
ED = Exposure duration
AT = Averaging time period over which the exposure is averaged

Values for the components of the Inhalation Exposure Factor were provided by the SJVAPCD for sensitive receptors and are shown in Table 19.

Table 18: Values of the Inhalation Exposure Factor for DPM

Receptor	CP - DPM $(mg/kg\text{-}dy)^{-1}$	DBR (liters/kg-day)	EF (days/yr)	ED (yrs)	AT (days)
Sensitive/ Residential	1.1	393	350	70	25,550

After applying Equations 1 and 2 with the values for the various factors shown in Table 18, the Cancer Risk for DPM is then calculated as:

Cancer $Risk_{DPM}$ = C_{DPM} x 414.5 (risk per million for sensitive receptors from DPM) (EQ-3)

Where:

Cancer $Risk_{DPM}$ = lifetime cancer risk to sensitive receptors from DPM emissions
C_{DPM} = Average DPM concentrations calculated from the AERMOD model in $\mu g/m^3$

4.1.2 - Non-Cancer Health Risk Characterization

Chronic Non-Cancer Impacts

Exposures to TACs such as DPM can also cause chronic (long-term) related non-cancer illnesses such as reproductive effects, respiratory effects, eye sensitivity, immune effects, kidney effects, blood effects, central nervous system, birth defects, or other adverse environmental effects. Risk characterization for non-cancer health risks from DPM is expressed as a hazard index (HI). The HI is a ratio of the predicted TAC concentration from the project's emissions to a concentration considered acceptable to public health professionals, termed the Reference Exposure Level (REL). A significant risk is defined by the SJVAPCD as an HI of 1 or greater. When evaluating chronic non-cancer effects due to DPM exposures, the California OEHHA has assigned a chronic non-cancer REL of 5 $\mu g/m^3$ for DPM (OEHHA 2011). The inhalation pathway is the predominant exposure pathway for DPM. The HI is calculated as:

$$HI = C_{air}/REL \qquad \text{(EQ-4)}$$

Where:

HI = chronic hazard index for DPM

C_{air} = Annual average concentration of DPM ($\mu g/m^3$)

REL = Chronic Reference Exposure Level ($\mu g/m^3$), taken as 5 ($\mu g/m^3$)

Acute Non-Cancer Impacts

The OEHHA has not defined an acute non-cancer REL for DPM. Therefore, the focus of this assessment is on the chronic non-cancer health hazards.

4.1.3 - Air Dispersion Model, Receptors, and Meteorology

The air dispersion model, receptor locations, and meteorological data used in the HRA used the same information as that used in the assessment of criteria pollutant impacts described earlier in Section 3.1.2.

4.2 - Project-Level Health Risk Impact Assessment

This section quantifies the estimated health risk impact to surrounding sensitive receptors resulting from the operation of the Project.

4.2.1 - Project-Level Health Risk Significance Thresholds

Project-level significance thresholds are designed to insure in the case of the siting of a new emission source, that the emissions from the source will not adversely expose sensitive receptors to significant health impacts.

The SJVAPCD recommends air pollution thresholds that can be used by Lead Agencies in determining whether a proposed project could result in a significant air quality and health risk impacts. The values of the individual significance thresholds have been defined based on scientific research and studies by the CARB and USEPA and are protective of public health. If a project has the potential to exceed any adopted significance threshold, then the project should be considered significant.

The SJVAPCD in its GAMAQI recommends the most common measure of significance of toxic air contaminant (TAC) emissions as an increase in cancer risk based on exposure levels for the maximally exposed sensitive receptor. Proposed development projects that have the potential to expose the public to TACs in excess of the following project-level significance thresholds shown in Table 19 would be considered to have significant air quality impact.

Table 19: SJVAPCD Project-Level Thresholds of Significance for TACs

Significance Criteria
• Probability of contracting cancer for the Maximally Exposed Individual exceeds 10 in one million • Ground-level concentrations of non-carcinogenic TACs would result in in a hazard index greater than 1 for the Maximally Exposed Individual
Source: GAMAQI, SJVAPCD 2002

These thresholds are based on the SJVAPCD's Risk Management Policy for permitting stationary sources of TACs. The SJVAPCD Governing Board first adopted these thresholds and others for land use projects in 1995 in the GAMAQI. The threshold was later confirmed when revisions to the GAMAQI were adopted in 2002. The TAC threshold of 10 in million is a project level threshold that measures the impact of emissions from an individual project on the maximally exposed sensitive receptor (i.e. house, school, hospital, etc.). These thresholds have been widely accepted and used routinely by Lead Agencies throughout the San Joaquin Valley since their adoption by the Air District. Indeed, these thresholds have also been adopted by several other air districts throughout California.

4.2.2 - Project-Level Health Risk Emission Estimates

The principal TAC emitted during the operation of the Project is DPM associated with emissions from:

- Diesel truck traffic exhaust;
- Diesel truck idling; and
- Operation of the TRUs.

For the assessment of health risks to sensitive/residential receptors, the DPM emissions factors derived from the CARB EMFAC model were developed for the build out year of 2012 and are assumed to remain constant over the entire 70-year exposure time period. This is a highly conservative assumption in that the implementation of emission control rules already adopted by the CARB will significantly reduce DPM emissions from heavy-duty trucks and TRUs over the next 5 to 10 years (CARB 2011) (see Section 4.4.2 below).

The estimation of health risk impacts follows the same analysis process as that for the estimation of criteria pollutant impacts. Health risk impacts were first estimated for the operation of the DPM emissions resulting from the operation of the Project's mobile sources. The impact estimates from this analysis were then compared to the relevant SJVAPCD health risk significance threshold to determine the significance of the impact estimates.

Table 20 provides a summary of the mobile source DPM emission factors used in this assessment. Note that the emissions assumed that all Walmart 4+ axle trucks are be represented by model year 2007 trucks while all other vehicles use the EMFAC2007 default fleet 1968-2012 vehicle emission factors.

Table 20: DPM Emission Factors for Project Vehicles

Diesel Truck Exhaust Emission Factors[(1)]	Emission Factor DPM (g/mi)
4+axle truck (HHDT) 15 mph 25 mph 35 mph	 0.073 0.065 0.070
2 axle truck (MHDT) 15 mph 25 mph 35 mph	 0.459 0.316 0.237
2 axle truck (LHDT2) 15 mph 25 mph 35 mph	 0.074 0.051 0.038
Diesel Truck Idle Emission Factors[(1)]	**Emission Factor DPM (g/hr)**
4+ axle truck (HHDT) 2 axle truck (MHDT) 2 axle truck (LHDT2)	0.114 1.149 0.916
TRU Emission Factors	**Emission Factor DPM[(2)] (g/hp-hr)**
TRU Exhaust + Idle	0.23
Customer/Small Delivery Trucks Composite Emission Factors	**Emission Factor (g/mi)**
10 mph 35 mph 55 mph	0.210 0.056 0.041

Notes:
[(1)] All vehicle emission factors derived from EMFAC2007 for Tulare County assuming the default model years of 1968 to 2012 except for Walmart 4+ axle trucks which assume a model year 2007
LHDT2 – light heavy duty truck MHDT = medium heavy duty trucks HHDT = heavy-heavy duty trucks
TRU = transport refrigeration unit
Source: see Appendix E

4.2.3 - Project-Level Health Risk Assessment Results

The results of the Project-level HRA are provided in Table 21 for the cancer risk estimates at the maximally impacted sensitive receptor. The results shown in this table indicate that the operation of the Project would not exceed the cancer risk significance threshold of 10 in one million set by the SJVAPCD. The maximally impacted sensitive receptor is located in the residential area to the north of the Project across Springville Avenue.

Table 21: Summary of Cancer Risks - Project Heavy Duty Trucks

Location	Maximum Lifetime Cancer Risk[1] (Risk per Million)	Significance Threshold (Risk per Million)	Exceeds Significance Threshold?
Maximum Impacted Sensitive Receptor[2]	4.2	10	No

Notes:
[1] Includes impacts from diesel particulate matter emissions
[2] The impacts noted under the column labeled "Maximum Lifetime Caner Risk" were determined as the highest impacts at any nearby sensitive receptor (residence) and do not include receptors that are located within parking lots, along the project fence line, vacant land, or roadways. The principal emphasis was on estimating impacts at locations where residences could be impacted.
Source: See Appendix C for the health risk assessment model output

The results of the chronic non-cancer assessment indicate that the Project would result in a hazard index of 0.002, substantially less than the hazard index significance threshold of 1.0 as set forth by the SJVAPCD.

4.3 - Cumulative Health Risk Impact Assessment

This section assesses the potential cumulative health risks associated with the operation of the Project and other nearby sources of TAC emissions. This assessment examines potential cumulative health risk impacts from the operation of the Project, and existing and reasonably foreseeable TAC emission sources near the Project.

4.3.1 - Methodology

The estimation of the cumulative cancer risk from DPM follows the same methodology as described earlier in Section 4.1.1. However, with the adoption of the cumulative health risk significance criteria for this assessment, the universe of TAC emission sources within a "zone of influence" includes other types of TACs that could potentially impact cumulative health risks. These TACs include benzene from the loading, spilling, venting, and dispensing of gasoline fuel from a nearby gasoline service station and TACs from the restaurant cooking of meat which can release naphthalene and poly aromatic hydrocarbons all of which have been identified as carcinogenic substances.

Estimates of benzene cancer risks were derived from the benzene emissions, benzene concentrations estimated from the AERMOD air dispersion model, and an equation that converts benzene air concentrations to a cancer risk. This equation is as follows:

Cancer $Risk_{Ben} = C_{Ben} \times 37.7$ (risk per million for sensitive receptors from Benzene
Where:

Cancer $Risk_{Ben}$ = lifetime cancer risk to sensitive receptors from Benzene emissions

C_{Ben} = Average Benzene concentrations calculated from the AERMOD model in $\mu g/m^3$

Estimates of cancer risk from the restaurant cooking TAC emissions were estimated using the CARB HARP health risk assessment model.

4.3.2 - Cumulative Health Risk Significance Thresholds

In addition to the impacts that an individual project may have on its environment, CEQA also states that another condition that could establish a project as having a significant impact on the environment is effects that are considered "cumulatively considerable".

A single source of TACs may be insignificant under the project-level thresholds, but when combined with emissions from neighboring emission sources could expose sensitive receptors to significant pollutant levels. A cumulative analysis of TACs is accomplished by identifying all sources of these pollutants near the project site within a certain "zone of influence" and using a dispersion model to determine exposure levels from the combined emissions of all sources at the maximally exposed sensitive receptor. The SJVAPCD's GAMAQI recommends a radius of 1 mile for TAC screening. Dispersion modeling, if indicated by initial screening, should include existing sources, the project, and any reasonably foreseeable projects.

The SJVAPCD in its GAMAQI has not defined a quantitative significance threshold in terms of an increase in cancer risk above the background for assessing cumulative impacts. Therefore, a review was made of the rules and guidelines published by other air districts within the State of California to determine if any quantitative thresholds exist for assessing cumulative health risk impacts. The only air district with publically issued guidance with quantifiable and technically supported cumulative health risk significance thresholds is the BAAQMD. After a lengthy technical and public review process, the BAAQMD adopted its CEQA Guidance on Air Quality Guidelines in May 2011 (BAAQMD 2011a). A major component of the Guidelines was the establishment of cumulative significance thresholds for health risks from new sources. The BAAQMD cumulative thresholds define both a quantitative risk level as well as a "zone of influence" of 1,000 feet from the project boundary within which all major sources of TACs should be identified. The BAAQMD cumulative risk significance thresholds are provided in Table 22.

Table 22: BAAQMD Cumulative Thresholds of Significance for TACs

Significance Criteria
• Cancer Risk>100 in a million (from all local sources) • Non-Cancer: >10 Hazard Index (from all local sources – chronic)
Zone of Influence: 1,000 foot radius from the property line
Source: BAAQMD 2011a

The 1,000-foot distance was selected by the BAAQMD based on several factors. A summary of research findings in CARB's Air Quality and Land Use Handbook (CARB 2005) indicates that traffic-related pollutants were higher than regional levels within approximately 1,000 feet downwind and that differences in health-related effects (such as asthma, bronchitis, reduced lung function, and increased medical visits) could be attributed in part to the proximity to heavy vehicle and truck traffic within 300 to 1,000 feet of receptors. Although CARB has recommended avoiding siting sensitive land uses within 500 feet of a freeway or high-volume urban roads, this BAAQMD significance criteria uses 1,000 feet based on research that has found attributable increased health effects in some cases out to as far as 1,000 feet. In the same study, CARB recommended avoiding siting sensitive land uses within 1,000 feet of a distribution center and major rail yard, which supports the use of a 1,000 feet evaluation distance in case such sources may be relevant to a particular project setting. A second consideration is that studies have shown that the concentrations of particulate matter tends to be reduced substantially or can even be indistinguishable from upwind background concentrations a distance 1,000 feet downwind from sources such as freeways or large distribution centers (Zhu et al. 2002, CARB 2005). Finally, a 1,000 foot zone of influence is also supported by Health & Safety Code §42301.6 (Notice for Possible Source Near School).

As noted from Table 22, the BAAQMD CEQA guidance also provides for a quantifiable cumulative health risk significance threshold that captures the integrated impacts from all sources located within the 1,000-foot area. The BAAQMD has set a cumulative health risk significance threshold for cancer risk as 100 in one million. The 100 in a million threshold is based on EPA guidance for conducting air toxics analyses and making risk management decisions at the facility and community-scale level. The guidance considers an "acceptable" range of cancer risks to be from one in a million to one in ten thousand. In protecting public health with an ample margin of safety, EPA strives to provide maximum feasible protection against risks to health from hazardous air pollutants (HAPs) by limiting risk to a level no higher than the one in ten thousand (100 in a million) estimated risk that a person living near a source would be exposed to at the maximum pollutant concentrations for 70 years. This goal is described in the preamble to the benzene National Emissions Standards for Hazardous Air Pollutants (NESHAP) rulemaking (54 Federal Register 38044, September 14, 1989) and is incorporated by Congress for EPA's residual risk program under Clean Air Act (CAA) section 112(f).

Thus, there is a demonstrable precedent for the establishment of cumulative thresholds and the zone of influence as evidenced by the BAAQMD Guidelines. The BAAQMD cumulative health risk significance thresholds were adopted for this cumulative assessment. Note that a discussion of importance of the SJVAPCD's GAMAQI zone of influence of 1 mile is provided in Section 4.3.5 which discusses the resulting cumulative impacts within this zone of influence.

4.3.3 - Cumulative Health Risk Emission Source Estimates

Within the 1000-ft zone of influence, there are a number of TAC emission sources that were included in the cumulative health risk assessment. These sources include:

- DPM emissions from the Project
- DPM and restaurant emissions from the Riverwalk Marketplace Phase I
- Vehicular traffic along State Route 190 located immediately south of the Project and associated DPM emissions;
- Vehicular traffic along State Route 65 located approximately 1,000 feet west of the Project and associated DPM emissions; (State Route 65 is just beyond the 1,000-foot zone but was included to provide a conservative assessment) and
- Diesel delivery truck DPM emissions and evaporative hydrocarbon emissions (benzene) from an existing gasoline service station located at the corner of State Route 190 and Jaye Street.

The locations of the cumulative impact sources within the 1,000-foot zone of influence are provided in Exhibit 9

Mobile Source Emissions

The DPM emission factors for the cumulative analysis emission sources are shown in Table 23.

Table 23: DPM Emission Factors – Cumulative Health Risk Analysis

Diesel Truck Exhaust Emission Factors	Emission Factors DPM (g/mi)
4+axle truck (HHDT)[(1)] 15 mph 25 mph 35 mph	Walmart / All Others 0.073 / 0.727 0.065 / 0.433 0.070 / 0.341
2 axle truck (MHDT) 15 mph 25 mph 35 mph	 0.459 0.316 0.237
2 axle truck (LHDT2) 15 mph 25 mph 35 mph	 0.074 0.051 0.038
Diesel Truck Idle Emission Factors	**Emission Factors DPM (g/hr)**
4+ axle truck (HHDT)[(1)]	Walmart / All Others 0.114 / 1.452
2 axle truck (MHDT) 2 axle truck (LHDT2)	1.149 0.912
TRU Emission Factors[(2)]	**Emission Factor DPM[(2)] (g/hp-hr)**
TRU Exhaust + Idle	0.23

Customer Delivery Exhaust Emission Factors[3]	Emission Factors DPM (g/mi)
Customer vehicle (LDA + LDT + MDT)	
10 mph	0.142
35 mph	0.056
55 mph	0.041

Notes:
[1] All 4+ axle vehicle emission factors derived from EMFAC2007 for Tulare County assuming the default model years of 1968 to 2012 except for Walmart 4+ axle trucks which assume a model year 2007
[2] TRU emission factors based on fleet average for Tulare County in 2012 from the OFFROAD model
[3] Customer vehicle emission factors based on EMFAC2007 for Tulare County 1968 to 2012 fleet
LDA = light duty trucks LDT = light duty trucks MDT = medium duty trucks
MHDT – medium heavy duty trucks HHDT = heavy-heavy duty trucks
TRU = transport refrigeration unit
Source: see Appendix F

Restaurant Emissions

The SJVAPCD has identified several TACs associated with the cooking operation of restaurants, specifically the cooking of meat. Several development pads within the Riverwalk Marketplace Phase I were assumed to be restaurants. The two main TACs from the cooking operations are polycyclic organic hydrocarbons (represented as benz(o)pyrene) and naphthalene. The estimation of TACs from restaurant cooking applied the emission methodology contained in the SJVAPCD Guidance on Air Dispersion Modeling (SJVAPCD 2010). The restaurant emissions were modeled as point sources released at a height of 5 feet above the restaurant roof.

The estimation of cancer risk from the restaurant operations employs a similar methodology as contained in cancer risk methodology described above. However, in the case of the restaurant operations, use was made of the CARB HARP health risk assessment model to estimate cancer risk from the restaurant operations[1]. The HARP model provides direct estimates of cancer risk for pollutants through several exposure pathways such as inhalation, dermal absorption, consumption of homegrown vegetables, soil ingestion, and mother's milk.

State Routes 190 and 65 Emissions

The DPM emissions from the two roadways were determined using traffic information available from the California Department of Transportation (CDOT) and emission factors derived from the California Air Resources Board EMFAC2007 emission factor model. According to the CDOT traffic data for the year 2009, the latest year published containing truck data, the annual average daily vehicle trips along State Route 190 and State Route 65 are shown in Table 24 (CDOT 2010). The vehicular traffic data noted in Table 24 was broken down into specific vehicle classes (i.e., light duty auto, light duty trucks, and heavy duty trucks and diesel vs. gasoline fuel) using information derived

[1] Pollutant concentrations are first estimated from the AERMOD air dispersion model, however, a unit emission rate of 1 gram/sec is used for each emission source. Then, using a conversion program developed by the CARB, the AERMOD results are imported into the CARB HARP health risk assessment model along with the actual source emissions for each TAC to determine cancer and non-cancer risks associated with the non-DPM air pollutants.

from the SJVAPCD-approved URBEMIS2007 land use emission model appropriate to Tulare County and the daily truck trip data above. In estimating emissions, it was assumed that representative vehicle speeds along State routes for passenger vehicles travel at 55 mph and the heavy-duty vehicles travel at 45 mph. Relevant vehicle characteristics assumed for the vehicle traffic along State Route 190 and State Route 65 are provided in Table 5, Table 6, and Table 7.

Table 24: State Routes 190 and 65 Roadway Vehicle Trip Information

Roadway	Location	Annual Average Daily Vehicle Trips	Passenger Vehicle Trips	2-axle Trucks	3-axle Trucks	4+ Axle Trucks
State Route 190	Junction State Route 65	23.100	18,942	2,620	416	1,122
State Route 65	South of State Route 190	24,700	22,600	1,160	147	792
State Route 65	North of State Route 190	21,000	19,215	986	125	674
Source: California Department of Transportation Traffic Count Data for 2009 (CDOT 2010) Source Appendix F						

Table 25: Vehicle Characteristics Along State Route 190

Vehicle Class(1)	Daily Vehicle Trips	Daily Diesel Vehicle Trips(2)	Vehicle Speed (mph)	DPM Emission Factor (g/mi)(3)
LDA	8,667	17	55	0.085
LDT1	3,089	130	55	0.034
LDT2	4,569	0	55	0.064
MDT	2,617	0	55	0.031
LHDT1	1,826	477	35	0.033
LHDT2	794	397	35	0.038
MHDT	416	352	35	0.237
HHDT	1,122	1,122	35	0.341
Total	23,100	2,495		

Notes:
(1) Vehicle class trip breakdown based on the URBEMIS model for Tulare County in 2012
(2) Diesel trip breakdown based on the URBEMIS model for Tulare County in 2012
(3) DPM emission factors derived from the EMFAC2007 mobile source model for Tulare County in 2012
Source: see Appendix F

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Exhibit 9

Cumulative Health Risk Emission Sources - 1,000 ft Zone of Influence

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Table 26: Vehicle Characteristics Along State Route 65 (South of State Route 190)

Vehicle Class(1)	Daily Vehicle Trips	Daily Diesel Vehicle Trips(2)	Vehicle Speed (mph)	DPM Emission Factor (g/mi)(3)
LDA	10,340	21	55	0.085
LDT1	3.686	155	55	0.034
LDT2	5,452	0	55	0.064
MDT	3,123	0	55	0.031
LHDT1	808	211	35	0.033
LHDT2	352	176	35	0.038
MHDT	147	124	35	0.237
HHDT	792	792	35	0.341
Total	24,700	1,479		

Notes:
(1) Vehicle class trip breakdown based on the URBEMIS model for Tulare County in 2012
(2) Diesel trip breakdown based on the URBEMIS model for Tulare County in 2012
(3) DPM emission factors derived from the EMFAC2007 mobile source model for Tulare County in 2012
Source: see Appendix F

Table 27: Vehicle Characteristics Along State Route 65 (North of State Route 190)

Vehicle Class(1)	Daily Vehicle Trips	Daily Diesel Vehicle Trips(2)	Vehicle Speed (mph)	DPM Emission Factor (g/mi)(3)
LDA	8,791	18	55	0.085
LDT1	3,134	132	55	0.034
LDT2	4,635	0	55	0.064
MDT	2,655	0	55	0.031
LHDT1	687	179	35	0.033
LHDT2	299	149	35	0.038
MHDT	125	106	35	0.237
HHDT	674	674	35	0.341
Total	21,000	1,258		

Notes:
(1) Vehicle class trip breakdown based on the URBEMIS model for Tulare County in 2012
(2) Diesel trip breakdown based on the URBEMIS model for Tulare County in 2012
(3) DPM emission factors derived from the EMFAC2007 mobile source model for Tulare County in 2012
Source: see Appendix F

Gasoline Service Station Emissions

As noted above, a gasoline service station is currently in operation at the southwest corner of State Route 190 and Jaye Street. The TAC emissions of concern in this regard are DPM emissions from the onsite travel and idling of delivery trucks at the gas station and evaporative emissions of benzene from the storage and dispensing of gasoline. Benzene has also been identified by the CARB as a carcinogenic substance. Estimates of benzene from the evaporation of gasoline were made using the methodology published by the California Air Pollution Control Officers Association (CAPCOA 1997) assuming a delivery of one 8,800 gallon fuel truck each day.

When emissions of both DPM and the other TAC pollutants occur at the same location, the risks associated with each pollutant type are summed together to determine a total cancer risk

4.3.4 - Cumulative Health Risk Impact Assessment Results

The results of the cumulative health risk assessment are provided in Table 8.

Table 28: Results of the Cumulative Health Risk Assessment – 1,000 ft Zone of Influence

Emission Source	Cancer Risk[1]
Project (Riverwalk Marketplace Phase II)	4.2
Riverwalk Marketplace Phase I	2.8
State Routes 190 and 65	17.7
Gas Station @ Jaye Street and State Route 190	0.2
Total Cumulative Cancer Risk	25.8
Cumulative Significance Threshold	100
Cumulative Impacts Exceed Threshold?	No

Note:
[1] Cancer risks are calculated at the location of the maximally impacted sensitive receptor identified in the Project-level assessment which is located in the residential area to the north of the Project across Springville Avenue; the cumulative impacts consider major sources of TACs within the 1,000 foot zone of influence. SR 65 is slightly over 1,000 feet from the receptor, but was included in the analysis as a conservative assumption.
Source: see Appendix F

As noted from the information shown in the above table, the cumulative cancer risk for all emission sources located within the 1,000-foot zone of influence at the maximally impacted location from the Project is less than the cumulative significance threshold of 100 cancer risks in a population of 1 million.

Therefore, the cumulative impacts are less than significant.

4.3.5 - Additional Consideration

It should be noted within the context of the above cumulative impact analysis, that the zone of influence was assumed to be 1,000 feet from the Project. This 1,000-foot distance is based on the cumulative impact criteria developed by the BAAQMD. Within the SJVAPCD GAMAQI, the discussion of cumulative impacts points to the need for a screening analysis of emission sources located out to 1 mile from a project. Within this larger 1-mile distance, there are four additional sources of TACs that potentially add to the cumulative impact assessment presented above. These two sources are the existing Home Depot store located approximately 1,850 feet east of the Project (3,000 feet southeast of the Project's maximally impacted sensitive receptor), and the existing Porterville Walmart Distribution Center located 3,200 feet southeast of the Project (5,000 feet southeast of the Project's maximally impacted sensitive receptor). In addition, a search of the City of Porterville's Economic Development Department's listing of available development sites identified a proposed light manufacturing land use near the intersection of Jaye Street and Montgomery Avenue located 1,600 feet southeast of the Project (3,000 feet southeast of the Project's maximally impacted sensitive receptor) and eight retail/commercial pads comprising the proposed Jaye Street Crossing project located 1,200 feet east of the Project (2,300 feet east of the Project's maximally exposed sensitive receptor). The latter two emission sources comprise a list of reasonably foreseeable projects.

A screening analysis was therefore prepared to examine the contribution of these emission sources to the total cumulative cancer risk. This analysis was accomplished as follows:

- Home Depot Store emissions were assumed to be represented by the operations from the existing Lowes store currently operating as part of the Riverwalk Marketplace Phase I since both stores are similar in their manner of sales. The Home Depot emissions were placed within the air dispersion model at the physical location of the Home Depot store to the east of the Project. Cancer risks to the Project's maximally predicted cancer risk attributable to the emissions from the Home Depot store were then calculated using the air dispersion model.

- Porterville Walmart Distribution Center emissions were based on a proposed but similar in size Walmart distribution center to be located in the City of Merced (City of Merced 2009). Estimates of cancer risk were from facility were extracted from the health risk assessment prepared for the proposed Merced Walmart Distribution Center at the distance to the Project's maximally impacted sensitive receptor (ENSR|AECOM 2009).

- The eight retail/development pads comprising the proposed Jaye Street Crossing project were assumed to be restaurants. Both delivery truck DPM emissions and restaurant cooking emissions were included in the assessment of health risk impacts.

- A proposed light manufacturing project was assumed to be developed at the Jaye Street/Montgomery Avenue site location. DPM emissions from the operation of diesel trucks were estimated based on a daily trip rate appropriate for a manufacturing land use from the Institute of Transportation Engineers (ITE 2009) and a vehicle mix from the City of Fontana Truck Trip Generation Study (City of Fontana 2003).

The locations of the emission sources within the 1-mile zone of influence are shown in Exhibit 10. The results of this additional consideration for the cumulative impact assessment with the expanded zone of influence are provided in Table 29. As shown in this table, even including the potential impacts within the expanded zone of influence, the total cumulative cancer risk is less than the cumulative cancer risk significance threshold.

Table 29: Cumulative Impacts with the One-Mile Expanded Zone of Influence

Emission Source	Cancer Risk(1)
Project (Riverwalk Marketplace Phase II)	4.2
Riverwalk Marketplace Phase I	2.8
State Routes 190 and 65	17.7
Gasoline Station @ Jaye Street and State route 190	0.2
Jaye Street Crossing	0.3
Home Depot(2)	0.5
Porterville Walmart Distribution Center(3)	7.3
Jaye Street/Montgomery Ave Light Manufacturing	2.5
Total Cumulative Cancer Risk	35.5
Cumulative Significance Threshold	100
Cumulative Impacts Exceed Threshold?	No

Note:
(1) Cancer risks are calculated at the location of the maximally impacted sensitive receptor identified in the Project-level assessment which is located in the residential area to the north of the Project across Springville Avenue; the cumulative impacts consider major sources of TACs within a 1 mile zone of influence
(2) Cancer risk from the Home Depot store was based on the emissions from the Lowes store which is in operation as part of the Riverwalk Marketplace Phase I
(3) Cancer risk from the Porterville Walmart Distribution Center was based on the cancer risk estimates reported for the proposed Walmart Distribution Center to be located in the City of Merced
Source: See Appendix G

4.4 - Risk Assessment Uncertainty

There are substantial uncertainties involved in assessing the health risk of air pollutants. There are uncertainties in dispersion modeling, toxicological factors, and exposure assessment. The methodology described above for assessing health risks involving emission estimations, dispersion modeling, and toxicity risk factors have been developed to provide conservative results (in terms of over-predicting impacts). Some of the factors that result in conservative results are discussed below.

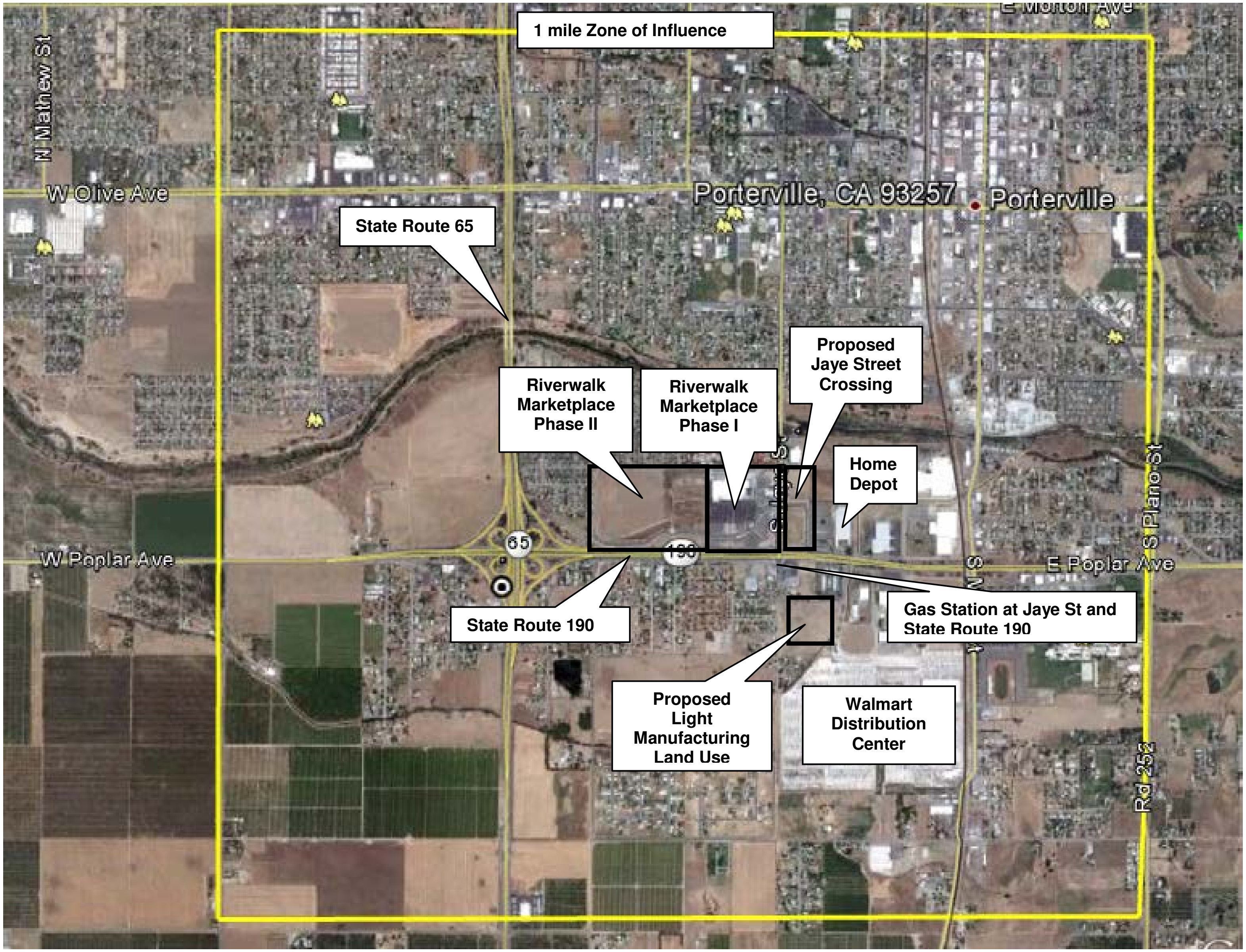

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Exhibit 10

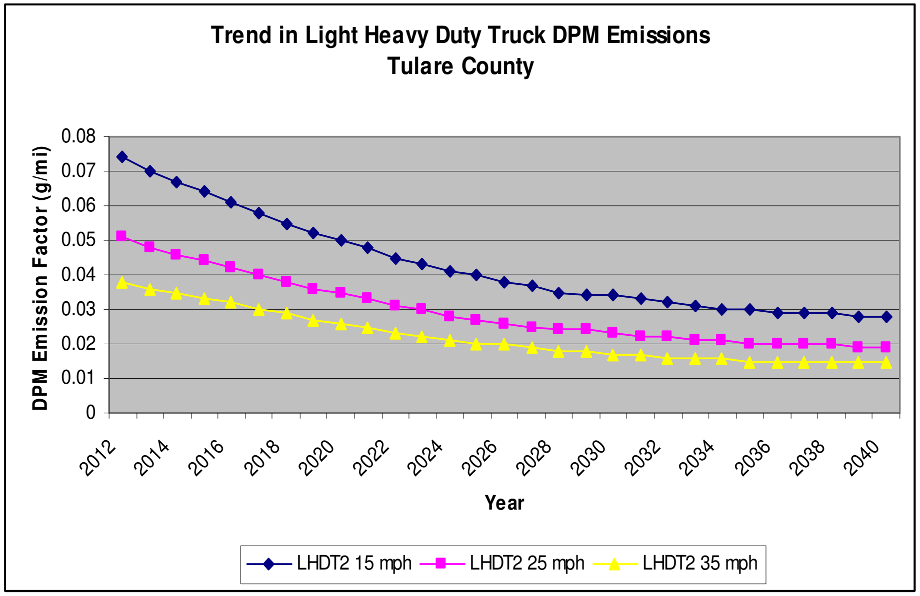
Cumulative Health Risk Emission Sources - 1Mile Zone of Influence

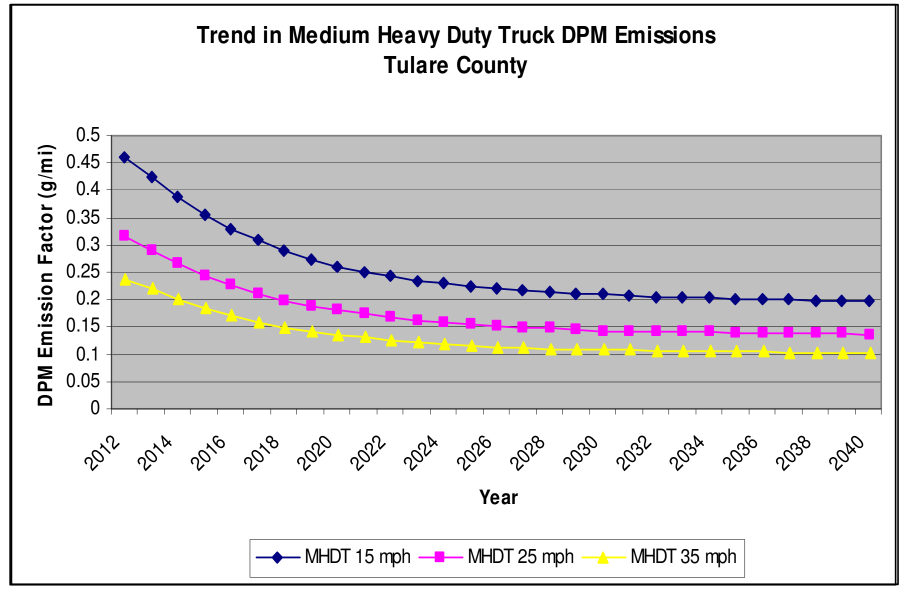
4.4.1 - Exposures Over 70-years

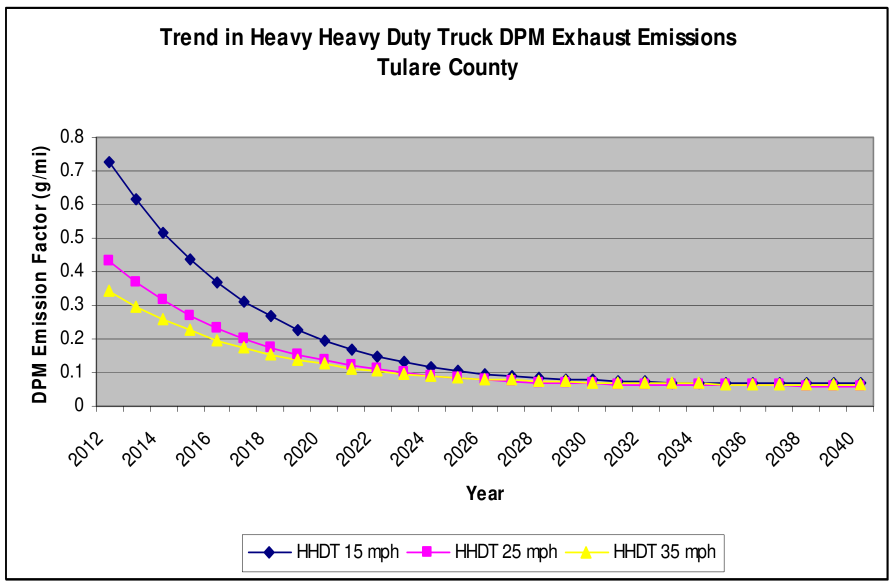
The OEHHA (OEHHA 2003) recommends using the 70-year exposure duration for determining residential cancer risks. Although it is unlikely that people will reside at a single residence for 70 years, it is common that people will spend their entire lives in a major urban area. While residing in urban areas, it is very possible to be exposed to the emissions from other facilities. In order to help ensure that people do not accumulate an excess unacceptable cancer risk from cumulative exposure to stationary facilities at multiple residences, OEHHA recommends the 70-year exposure duration for risk management decisions. However, it is important to note that a person who has resided in his or her current residence for less than 70 years will have a cancer risk less than what is calculated for a 70-year risk. Nonetheless, this assessment attempts to be conservative and provide a worst-case scenario for exposure.

4.4.2 - Estimates of DPM Emissions from Diesel Trucks and TRUs

One very important assumption that the SJVAPCD requires in estimating cancer risk is that the level of emissions used to estimate health risks must be representative of the emissions at the time of the proposed project’s build out which in the case of the proposed project is 2012. This assumption implies that the emissions, whether from a proposed project or from the surrounding emission sources, remains unchanged for the entire 70-year exposure period over which cancer risk is estimated. This assumption is extremely conservative in terms of greatly over-estimating future impacts and does not represent what is projected to occur in the future particularly as regards the emissions from heavy-duty trucks. Based on current emission rules already adopted by the CARB that specifically address DPM emissions from heavy-duty diesel trucks, heavy-duty diesel truck DPM emissions are expected to decline by up to 80 percent over the next 10 to 20 years from levels in 2012. Such rules are already included in estimating future levels of emissions as part of the emission inventories employed in the San Joaquin Valley Air Basin attainment plans for attaining ozone and particulate matter air quality standards. Exhibit 11 shows the future trends of DPM emission rates from the types of heavy-duty truck vehicles analyzed in this assessment. These emission rates were taken from the EMFAC2007 mobile source emission model that reflects all emission control regulations adopted by the CARB as of the November 2006 release date of the EMFAC2007 model. Subsequent to that release date, the CARB has enacted even more stringent regulations affecting emissions of DPM heavy duty trucks and transport refrigeration units that will result in even greater levels of emission reductions than shown in Exhibit 11, particularly during the time period of 2012 to 2025 (CARB 2011). Finally, regulations enacted by the CARB will result in significant reductions in DPM from TRUs. Over the next 10 years, the TRU emission rate is expected to decline by a factor of 10 from current levels.







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NORTH

Exhibit 11
Trends in DPM Emission Factors for Heavy Duty Vehicles

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4.4.3 - Application of Breathing Rates in the Estimation of Cancer Risk

One of the parameters that is required to estimate cancer risk is the daily breathing rate (DBR) shown in Equation 2 above. The DBR is an estimate of the volume of air breathed by exposed populations and varies by the weight and level of physical activity of a person. The assumption required by the SJVAPCD is to use the 95th percentile of the DBR which has been established by the OEHHA as having a value of 392 liters/kilogram-day. In 2003, the ARB provided recommendations for a DBR of the 80th percentile or 302 liters/kilogram-day for determining inhalation-based cancer risk (ARB 2003b). Since cancer risk is directly proportional the DBR, the use 95th percentile as opposed to the CARB-recommended 80th percentile DBR results in a higher estimate of cancer risk by about 30 percent.

SECTION 5: REFERENCES

BAAQMD 2011a Bay Area Air Quality Management District. CEQA Air Quality Guidelines. Website: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_May%202011_5_3_11.ashx

BAAQMD 2011b Bay Area Air Quality Management District. Recommended Methods for Screening and Modeling Local Risks and Hazards. Website: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx

CAPCOA 1997 California Air Pollution Control Officers Association. Gasoline Service Station Industrywide Risk Assessment Guidelines. Website: www.arb.ca.gov/AB2588/rrap-iwra/GasIWRA.pdf

CARB 1998 California Air Resources Board. Identification of Diesel Exhaust as a Toxic Air Contaminant. Website: http://www.arb.ca.gov\regact\regup98.htm#diesltac.

CARB 2005 California Air Resources Board. Air Quality and Land Use Handbook: A Community Health Perspective. Website: http://www.arb.ca.gov/ch/handbook.pdf

CARB 2006 California Air Resources Board. EMFAC2007 Mobile Source Emission Model. Available at: http://www.arb.ca.gov/msei/onroad/latest_version.htm

CARB 2010a California Air Resources Board. Ambient Air Quality Standards. September 8. Available at: www.arb.ca.gov/research/aaqs/aaqs2.pdf

CARB 2010b California Air Resources Board. Historical Air Quality, Top 4 Summary. Available at: www.arb.ca.gov/adam/topfour/topfour1.php

CARB 2010c California Air Resources Board. Area Designation Maps / State and National. 2010 State Area Designations. Changes became effective March 25, 2010. Available at: www.arb.ca.gov/desig/adm/adm.htm.

CARB 2011 California Air Resources Board. Diesel Activities – Mobile Vehicles and Equipment. Available at: http://www.arb.ca.gov/diesel/mobile.htm

City of Fontana 2003 Truck Trip Generation Study. Website: http://www.fontana.org/DocumentView.aspx?DID=632

City of Merced 2009 Draft Environmental Impact Report. Proposed Wal-mart Regional Distribution Center. Website: http://www.cityofmerced.org.

City of Porterville 2011 Riverwalk Marketplace Phase II Revised Draft Environmental Impact Report. Available at: http://www.ci.porterville.ca.us/depts/CommunityDevelopment/RiverwalkMarketplacePhaseIIDraftEIR.cfm

CDOT 2010 California Department of Transportation. Annual Average Daily Truck Traffic. Website: http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/index.htm

ENSR|AECOM 2009 Draft Environmental Impact Report. Proposed Wal-mart Regional Distribution Center Appendix C. Air Quality Modeling Data. Website: http://www.cityofmerced.org

EPA 1999 U.S. Environmental Protection Agency. Ozone and your Health. EPA-452/F-99-003. Available at: www.epa.gov/air/ozonepollution/pdfs/health.pdf

EPA 2003 U.S. Environmental Protection Agency. September 2003. Particle Pollution and your Health. EPA-452/F-03-001. http://epa.gov/pm/pdfs/pm-color.pdf.

EPA 2009 U.S. Environmental Protection Agency. Fact Sheet, Proposed Revisions to the National Ambient Air Quality Standards for Nitrogen Dioxide. July 22, 2009. Available at: www.epa.gov/air/nitrogenoxides/pdfs/20090722fs.pdf

Grubb and Ellis 2011 Personal communication with Mark Cline of Grubb and Ellis, June 7, 2011

ITE 2009 Institute of Transportation Engineers. ITE Trip Generation Rates. 8th Edition. Website: http://www.ite.org

LSA 2006 LSA Associates. San Jose Lowe's Store EIR, Air Quality Section 5C.

OEHHA 1987 California Environmental Protection Agency, Office of Environmental Health Hazard Assessment. California Codes. Health and Safety Code

OEHHA 2003 California Environmental Protection Agency, Office of Environmental Health Hazard Assessment. Air Toxics Hot Spots Program Risk Assessment Guidelines. The Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. Available at: http://www.oehha.ca.gov/air/hot_spots/HRSguide.html#download

OEHHA 2011 California Environmental Protection Agency, Office of Environmental Health Hazard Assessment. Toxicity Criteria Database. Available at: http://www.oehha.ca.gov/tcdb/

Quad Knoff 2006 Quad Knoff. Riverwalk Marketplace Traffic Impact Study in the City of Porterville

Ruettgers ^ Schuler 2010 Ruettgers & Schuler. Traffic Study – Riverwalk Marketplace Phase 2. Available at: http://www.ci.porterville.ca.us/depts/CommunityDevelopment/documents/Apx5_10_TrafficStudy_000.pdf

SJVAPCD 2002 San Joaquin Valley Air Pollution Control District. 2002. Guide for Assessing and Mitigating Air Quality Impacts. 2002.

SJVAPCD 2009	San Joaquin Valley Air Pollution Control District. Proposed Walmart Fleet Methodology. Letter from Arnaud Marjollet to David Mitchell, March 23, 2009.
SJVAPCD 2010	San Joaquin Valley Air Pollution Control District, Guidance for Air Dispersion Modeling. Available at: http://www.valleyair.org/busind/pto/Tox_Resources/Modeling%20Guidance%20W_O%20Pic.pdf;
SJVAPCD 2011a	San Joaquin Valley Air Pollution Control District, PM2.5 Guidance , October5, 2011
SJVAPCD 2011b	San Joaquin Valley Air Pollution Control District, Email communication with Glenn Reed, April 15, 2011.
UCD 1997	University of California, Davis. Prepared for California Department of Transportation. 1997. Transportation Project-Level Carbon Monoxide Protocol. www.dot.ca.gov/hq/env/air/pages/coprot.htm .
Zhu, Y. et al 2002	*Study of Ultra Fine Particles Near A Major Highway With Heavy-Duty Diesel Traffic*. Atmospheric Environment. 2002; 36:4323-4335.

Appendix A:
Project-Level Criteria Pollutant Emissions
(see accompanying CD)

Appendix B:
Project-Level AERMOD Model Criteria Pollutant Files
(see accompanying CD)

Appendix C:
Criteria Pollutant Cumulative Emissions
(see accompanying CD)

Appendix D:
Criteria Pollutant Cumulative AERMOD Files
(see accompanying CD)

Appendix E:
Project-Level Health risk Emissions and AERMOD Files
(see accompanying CD)

Appendix F:
Cumulative Health Risk Emission and AERMOD Files
1000-foot Zone of Influence
(see accompanying CD)

Appendix G
Cumulative Health Risk Emission and AERMOD Files
1-Mile Zone of Influence
(see accompanying CD)