AIR QUALITY IMPACT ANALYSIS

WAL-MART SUPERCENTER

CITY OF ONTARIO, CALIFORNIA

Prepared for:

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METEOROLOGY CLIMATE

The climate of western San Bernardino County, as with all of Southern California, is governed largely by the strength and location of the semi-permanent high pressure center over the Pacific Ocean and the moderating effects of the nearby vast oceanic heat reservoir. Local climatic conditions are characterized by very warm summers, mild winters, infrequent rainfall, moderate daytime on-shore breezes, and comfortable humidity's. Unfortunately, the same climatic conditions that create such a desirable living climate combine to severely restrict the ability of the local atmosphere to disperse the large volumes of air pollution generated by the population and industry attracted in part by the climate.

The Ontario Wal-Mart Project will be situated in an area where the pollutants generated in coastal portions of the Los Angeles basin undergo photochemical reactions and then move inland across the project site during the daily sea breeze cycle. The resulting smog at times gives San Bernardino County some of the worst air quality in all of California. Fortunately, significant air quality improvement in the last decade suggests that healthful air quality may someday be attained despite the limited regional meteorological dispersion potential.

Winds across the project area are an important meteorological parameter because they control both the initial rate of dilution of locally generated air pollutant emissions as well as controlling their regional trajectory. Winds across the project site display a very unidirectional onshore flow from the southwest-west that is strongest in summer with a weaker offshore return flow from the northeast that is strongest on winter nights when the land is colder than the ocean. The onshore winds during the day average 8-12 mph while the offshore flow is often calm or drifts slowly westward at 1-3 mph.

During the daytime, any locally generated air emissions are thus rapidly transported eastward toward Banning Pass and northeast towards Cajon Pass without generating any localized air quality impacts. The nocturnal drainage winds which move slowly across the area have some potential for localized stagnation, but fortunately, these winds have their origin in the adjacent mountains where background pollution levels are low such that any localized contributions do not create any unhealthful impacts.

In conjunction with the two characteristic wind regimes that affect the rate and orientation of horizontal pollutant transport, there are two similarly distinct types of temperature inversions that control the vertical depth through which pollutants are mixed. The summer on-shore flow is capped by a massive dome of warm, sinking air which caps a shallow layer of cooler ocean air. Such marine/subsidence inversions act like a giant lid over the basin. They allow for local mixing of emissions, but they confine the entire polluted air mass within the basin until it escapes into the desert or along the thermal chimneys formed along heated mountain slopes.

One other important local wind pattern within the project vicinity drainages occurs when high pressure over the Great Basin creates funneled, gusty down-canyon flows. The air moving downslope is warmed by a process called "adiabatic compression." Because the air was already dry at the top of the mountains, it is super-dry when it reaches the bottoms of local canyons. Such "Santa Ana" downslope winds can create dust storms, and make dust control difficult.

In winter, when the air near the ground cools while the air aloft remains warm, radiation inversions are formed that trap low-level emissions such as automobile exhaust near their source. As background levels of primary vehicular exhaust rise during the seaward return flow, the combination of rising non-local baseline levels plus emissions trapped locally by these radiation inversions creates micro-scale air pollution "hot spots" near freeways, shopping centers and other traffic concentrations in coastal areas of the Los Angeles Basin. Because the nocturnal downslope has its origin in very lightly developed areas of the San Gabriel Mountains, background pollution levels at night in winter are very low in the project vicinity. Localized air pollution contributions are insufficient to create any "hot spot" potential when superimposed upon the clean nocturnal baseline. The combination of winds and inversions are thus critical determinants in leading to the degraded air quality in summer, and the generally good air quality in winter in the project area.

AIR QUALITY SETTING

AIR QUALITY STANDARDS

In order to assess the air quality impact of operations at the proposed Ontario Wal-Mart Supercenter project, that impact, together with baseline air quality levels, must be compared to the applicable ambient air quality standards. These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress or infection such as asthmatics, the elderly, the very young, people weak from other disease or illness, and persons engaged in heavy work or exercise, all called “sensitive receptors.” Healthy adults can tolerate periodic exposure to air pollution levels somewhat above these standards before adverse health effects are observed. Recent research has shown, however, that chronic exposure to ozone even at the federal clean air standard level can create unhealthful reactions through pulmonary distress. Just meeting clean air standards may therefore ultimately not be enough to protect human health such that an additional margin of safety may need to be created to achieve all clean air objectives.

The Clean Air Act Amendments (CAAA) of 1970 established national AAQS with states retaining the option to adopt more stringent standards or to include other pollution species. Because California already had standards in existence before the federal AAQS were established, and because of unique meteorological problems in California, there is considerable diversity between state and federal standards currently in effect in California, as shown in Table 1. Sources and health effects of these criteria pollutants are described in Table 2.

The entries in Table 1 include the federal standards for chronic (8-hour) ozone exposure and for ultra-small diameter particulate matter of 2.5 microns or less in diameter (called "PM-2.5") adopted in 1997. The Environmental Protection Agency’s (EPA) authority to adopt such standards was subsequently challenged. In a unanimous decision published in February 2001, the U. S. Supreme Court ruled the EPA did have authority to promulgate standards without specific congressional authority, and that a cost-benefit analysis was not required for health-based standards. The Court also ruled, however, that there was an attainment schedule inconsistency between "old" and "new" standards. This inconsistency was resolved through a consent decree signed by the EPA in 2002. The decree required that EPA develop (non) attainment designations for the federal 8-hour ozone and the PM-2.5 standards by 2005. Preparation and implementation of non-attainment plans is to be completed in 2007.

After further review of the relationship between fine particulate matter and human health effects, the California Air Resources Board adopted a new state standard for PM-2.5 that is more stringent than the federal standard. This standard was adopted June 20, 2002 and went into effect in July 2003. The State PM-2.5 standard is more of a goal in that it does not have specific attainment planning requirements like a federal clean air standard. The State standard became enforceable in 2003 when it was incorporated into the California Health and Safety Code.

Table 1

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards		Federal Standards		
		Concentration	Method	Primary	Secondary	Method
Ozone (O_3)	1 Hour	0.09 ppm (180 μg/m³)	Ultraviolet Photometry	0.12 ppm (235 μg/m³)	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.07 ppm (140 μg/m³)		0.08 ppm (157 μg/m³)		
Respirable Particulate Matter (PM_{10})	24 Hour	50 μg/m³	Gravimetric or Beta Attenuation	150 μg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 μg/m³		50 μg/m³		
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	No Separate State Standard		65 μg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 μg/m³	Gravimetric or Beta Attenuation	15 μg/m³		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m³)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m³)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m³)		35 ppm (40 mg/m³)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		–	–	–
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	(new standard pending)	Gas Phase Chemiluminescence	0.053 ppm (100 μg/m³)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 μg/m³)		–		
Lead	30-Day average	1.5 μg/m³	Atomic Absorption	–	–	–
	Calendar Quarter	–		1.5 μg/m³	Same as Primary Standard	High Volume Sampler and Atomic Absorption
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	Ultraviolet Fluorescence	0.030 ppm (80 μg/m³)	–	Spectrophotometry (Pararosaniline Method)
	24 Hour	0.04 ppm (105 μg/m³)		0.14 ppm (365 μg/m³)	–	
	3 Hour	–		–	0.5 ppm (1,300 μg/m³)	
	1 Hour	0.25 ppm (655 μg/m³)		–	–	
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer–visibility of 10 miles or more (0.07–30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates	24 Hour	25 μg/m³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 μg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride	24 Hour	0.01 ppm (26 μg/m³)	Gas Chromatography			

Table 2

Health Effects of Major Criteria Pollutants

Pollutants	Sources	Primary Effects
Carbon Monoxide (CO)	• Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust. • Natural events, such as decomposition of organic matter.	• Reduced tolerance for exercise. • Impairment of mental function. • Impairment of fetal development. • Death at high levels of exposure. • Aggravation of some heart diseases (angina).
Nitrogen Dioxide (NO_2)	• Motor vehicle exhaust. • High temperature stationary combustion. • Atmospheric reactions.	• Aggravation of respiratory illness. • Reduced visibility. • Reduced plant growth. • Formation of acid rain.
Ozone (O_3)	• Atmospheric reaction of organic gases with nitrogen oxides in sunlight.	• Aggravation of respiratory and cardiovascular diseases. • Irritation of eyes. • Impairment of cardiopulmonary function. • Plant leaf injury.
Lead (Pb)	• Contaminated soil.	• Impairment of blood function and nerve construction. • Behavioral and hearing problems in children.
Respirable Particulate Matter (PM-10)	• Stationary combustion of solid fuels. • Construction activities. • Industrial processes. • Atmospheric chemical reactions.	• Reduced lung function. • Aggravation of the effects of gaseous pollutants. • Aggravation of respiratory and cardio respiratory diseases. • Increased cough and chest discomfort. • Soiling. • Reduced visibility.
Ultra Fine Particulate Matter (PM-2.5)	• Fuel combustion in motor vehicles, equipment, and industrial sources. • Residential and agricultural burning. • Industrial processes. • Also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.	• Increases respiratory disease. • Lung damage. • Cancer and premature death. • Reduces visibility and results in surface soiling.
Sulfur Dioxide (SO_2)	• Combustion of sulfur-containing fossil fuels. • Smelting of sulfur-bearing metal ores. • Industrial processes.	• Aggravation of respiratory diseases (asthma, emphysema). • Reduced lung function. • Irritation of eyes. • Reduced visibility. • Plant injury. • Deterioration of metals, textiles, leather, finishes, coatings, etc.

Source: California Air Resources Board, 2002.

Because of the strong evidence that chronic ozone exposure is more harmful than short-term hourly levels, the ARB has adopted a new ozone standard. The new standard mirrors the federal longer-term (8 hour) exposure limit. The California 8-hour ozone standard is slightly more stringent than the federal standard. It does not have a specific attainment deadline, but only that continued progress toward attainment must be demonstrated. A new annual State AAQS for NO_2 has also been proposed for adoption that is more stringent than the corresponding federal standard.

As part of EPA's 2002 consent decree on clean air standards, an additional review of airborne particulate matter (PM) and human health was initiated. A substantial modification of federal clean air standards for PM was promulgated in 2006. Standards for PM-2.5 were strengthened, a new class of PM in the 2.5 to 10 micron size was created, some PM-10 standards were revoked, and a distinction between rural and urban air quality was adopted.

BASELINE AIR QUALITY

Existing levels of ambient air quality and historical trends and projections in the project area are best documented from measurements made near the project site. The South Coast Air Quality Management District (SCAQMD) operates a monitoring station in Ontario that measures particulate matter. The closest station to Ontario that measures nitrogen dioxide and ozone is located in Upland. From these data resources, one can well infer that baseline air quality levels near the Ontario Wal-Mart project site are occasionally very unhealthful. Attainment may still be many years away.

Table 3 summarizes the last five years of published SCAQMD monitoring data from the Ontario and/or Upland stations. Ozone and particulates are seen to be the two most significant air quality concerns. Ozone, the primary ingredient in photochemical smog, is obviously an important pollution problem in the area. Less than three (3) percent of all days of the year experience a violation of the national hourly ozone standard. However, about 11 percent of all days exceed the California one-hour standard. The federal 8-hour ozone standard has been violated on an average of 24 days per year from 2001-2005. For the last five years, ozone levels have neither improved nor gotten noticeably worse. While ozone levels are still high, they are much lower than 10 to 20 years ago. Attainment of all clean air standards in the project vicinity is not likely to occur soon, but the severity and frequency of violations is expected to continue to slowly decline during the current decade.

In addition to gaseous air pollution concerns, San Bernardino County experiences frequent violations of standards for 10-micron diameter respirable particulate matter (PM-10). High dust levels occur during Santa Ana wind conditions, as well as from the trapped accumulation of soot,

Table 3
Project Area Air Quality Monitoring Summary
(Number of Days Standards were Exceeded and Maximum Levels During Such Violations)

	Pollutant/Standard	2001	2002	2003	2004	2005
# Days Exceeded	**Ozone**					
	1-Hour > 0.09 ppm (S)	53	36	48	31	34
	1-Hour > 0.12 ppm (F)*	14	5	15	2	8
	8- Hour > 0.08 ppm (F)	33	19	35	18	15
	Max 1-Hour Conc. (ppm)	0.174	0.139	0.155	0.138	0.149
# Days Exceeded	**Carbon Monoxide**					
	1-Hour > 20 ppm (S)	0	0	0	0	0
	8- Hour > 9 ppm (S, F)	0	0	0	0	0
	Max 1-Hour Conc. (ppm)	3.0	4.0	4.0	4.0	3.0
	Max 8-Hour Conc. (ppm)	1.75	1.6	2.9	3.3	1.8
# Days Exceeded	**Nitrogen Dioxide**					
	1-Hour > 0.25 ppm (S)	0	0	0	0	0
	Max 1-Hour Conc. (ppm)	0.13	0.12	0.11	0.11	0.10
# Days Exceeded	**PM-10**					
	24-Hour > 50 $\mu g/m^3$ (S)	27/64	25/61	18/62	17/58	19/60
	24-Hour > 150 $\mu g/m^3$ (F)	1/64	0/61	0/58	0/58	0/60
	Max. 24-Hr. Conc. ($\mu g/m^3$)	166	91	149	93	74
# Days Exceeded	**PM-2.5**					
	24-Hr. > 65 $\mu g/m^3$ (F)**	2/113	0/111	3/118	2/112	1/110
	Max. 24-Hr. Conc. ($\mu g/m^3$)	71.2	64.8	88.9	86.1	87.8

(S) - State ambient standard; (F) = Federal ambient standard

*=Standard revoked in 2006.

**= Standard reduced to 35 $\mu g/m^3$ in 2006

Ontario: PM-10, PM-2.5
Upland: Carbon Monoxide, Ozone, Nitrogen Dioxide

Source: SCAQMD Air Monitoring Summaries

roadway dust and byproducts of atmospheric chemical reactions during warm season days with poor visibility. Table 3 shows that about 35 percent of all days in the last five years in Ontario experienced a violation of the State 24-hour PM-10 standard. However, the three-times less stringent federal 24-hour standard has only been exceed once in the past five years.

A substantial fraction of PM-10 is comprised of ultra-small diameter particulates capable of being inhaled into deep lung tissue (PM-2.5). Although the number of violations and maximum 24-hour concentrations seem to be declining for PM-10, the maximum 24-hour concentrations for PM-2.5 seem to be slightly increasing. Both the frequency of violations of particulate standards, as well as high percentage of PM-2.5, are air quality concerns in the project area.

While many of the major ozone precursor emissions (automobiles, solvents, paints, etc.) have been substantially reduced, most major PM-10 sources (construction dust, vehicular turbulence along roadway shoulders, truck exhaust, etc.) have not been as effectively reduced. Prospects of ultimate attainment of ozone standards are better than for particulate matter.

More localized pollutants such as carbon monoxide, nitrogen oxides, etc. are very low near the project site because background levels, even in Ontario never exceed allowable levels. There is substantial excess dispersive capacity to accommodate localized vehicular air pollutants such as NOx or CO without any threat of violating applicable AAQS.

AIR QUALITY PLANNING

The Federal Clean Air Act (1977 Amendments) required that designated agencies in any area of the nation not meeting national clean air standards must prepare a plan demonstrating the steps that would bring the area into compliance with all national standards. The South Coast Air Basin (SCAB) could not meet the deadline for ozone, nitrogen dioxide, carbon monoxide, or PM-10. In the SCAB, the agencies designated by the governor to develop regional air quality plans are the SCAQMD and the Southern California Association of Governments (SCAG). The two agencies first adopted an Air Quality Management Plan (AQMP) in 1979 and revised it several times as earlier attainment forecasts were shown to be overly optimistic.

The 1990 Federal Clean Air Act Amendment (CAAA) required that all states with air-sheds with “serious” or worse ozone problems submit a revision to the State Implementation Plan (SIP). Amendments to the SIP have been proposed, revised, and approved over the past decade. The most current regional attainment emissions forecast for ozone precursors (ROG and NOx) and for carbon monoxide (CO) is shown in Table 4.

The Air Quality Management District (AQMD) adopted an updated clean air “blueprint” in August 2003. The 2003 AQMP was approved by the EPA in 2004. The Air Quality Management Plan (AQMP) outlined the air pollution measures needed to meet federal health-based standards for ozone by 2010 and for particulates (PM-10) by 2006. Components of the 2003 air plan included:

- How the federal standard for CO will be maintained.

Table 4

South Coast Air Basin Emissions Forecasts
(Emissions in tons/day)

Pollutant	2005[a]	2010[b]	2015[b]	2020[b]
NOx	957	756	586	496
ROG	684	567	517	492
CO	3838	2943	2395	2056
PM-10	276	278	284	292
PM-2.5	97	97	98	100

[a]2005 Base Year.
[b]With current emissions reduction programs and adopted growth forecasts.

Source: California Air Resources Board, The 2006 California Almanac of Emission & Air Quality.

- Control measures to further reduce emissions from business, industry and paints.
- Measures to be adopted by CARB and EPA to further reduce pollution from:
  - Cars
  - Trucks
  - Construction equipment
  - Aircraft
  - Ships
  - Consumer products

With re-designation of the air basin as non-attainment for the 8-hour ozone standard, a new attainment plan is currently in preparation. This plan will shift most of the one-hour ozone standard attainment strategies to the 8-hour standard. As previously noted, the attainment date will "slip" from 2010 to 2021. The next attainment plan will also include strategies for ultimately meeting the federal PM-2.5 standard.

A draft of the 2007 AQMP is currently in public review. The 2007 AQMP recognizes the interaction between photochemical processes which create both ozone and the smallest airborne particulates (PM-2.5). The 2007 AQMP is therefore a coordinated plan for both pollutants. Key emissions reductions strategies in the updated air quality plan include:

- Ultra-low emissions standards for both new and existing sources (including on-and-off-road heavy trucks, industrial and service equipment, locomotives, ships and aircraft).
- Accelerated fleet turnover to achieve benefits of cleaner engines.
- Reformulation of consumer products.
- Modernization and technology advancements from stationary sources (refineries, power plants, etc.).

Developments, such as the proposed Ontario Wal-Mart Supercenter project do not directly relate to the AQMP in that there are no specific air quality programs or regulations governing reuse projects. Conformity with adopted plans, forecasts, and programs relative to population, housing, employment and land use is the primary yardstick by which impact significance of master planned growth is determined. If a given project incorporates any available transportation control measures that can be implemented on a project-specific basis, and if the scope and phasing of a project are consistent with adopted forecasts as shown in the Regional Comprehensive Plan (RCP), then the regional air quality impact of project growth would not be significant because of planning inconsistency. The SCAQMD, however, while acknowledging that the AQMP is a growth-accommodating document, does not favor designating regional impacts as less-than-significant just because the proposed development is consistent with regional growth projections. Air quality impact significance for the proposed project has therefore been analyzed on a project-specific basis.

AIR QUALITY IMPACT

SIGNIFICANCE CRITERIA

Air quality impacts are considered "significant" if they cause clean air standards to be violated where they are currently met, or if they measurably contribute to an existing violation of standards. Any substantial emissions of air contaminants for which there is no safe exposure, or nuisance emissions such as dust or odors, would also be considered a significant impact.

Appendix G of the California CEQA Guidelines (15064 (h)) offers the following five tests of air quality impact significance. A project would have a potentially significant impact if it:

a. Conflicts with or obstructs implementation of the applicable air quality plan.

b. Violates any air quality standard or contributes substantially to an existing or projected air quality violation.

c. Results in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).

d. Exposes sensitive receptors to substantial pollutant concentrations.

e. Creates objectionable odors affecting a substantial number of people.

PRIMARY POLLUTANTS

Air quality impacts generally occur on two scales of motion. Near an individual source of emissions or a collection of sources such as a crowded intersection or parking lot, levels of those pollutants that are emitted in their already unhealthful form will be highest. Carbon monoxide (CO) is an example of such a pollutant. Primary pollutant impacts can generally be evaluated directly in comparison to appropriate clean air standards. Violations of these standards where they are currently met, or a measurable worsening of an existing or future violation, would be considered a significant impact. Many particulates, especially fugitive dust emissions, are also primary pollutants. Because of the non-attainment status of the South Coast Air Basin (SCAB) for PM-10, an aggressive dust control program is required to control fugitive dust.

SECONDARY POLLUTANTS

Many pollutants, however, require time to transform from a more benign form to a more unhealthful contaminant. Their impact occurs regionally far from the source. Their incremental regional impact is minute on an individual basis and cannot be quantified except through complex photochemical computer models. Analysis of significance of such emissions is thus based on a specified amount of emissions (pounds, tons, etc.) even though there is no way to translate those emissions directly into a corresponding ambient air quality impact.

Because of the chemical complexity of primary versus secondary pollutants, the SCAQMD has designated significant emissions levels as surrogates for evaluating impact significance independent of chemical transformation processes. Projects in the SCAB with daily emissions that exceed any of the following emission thresholds are recommended by the SCAQMD to be considered significant:

SCAQMD Emissions Significance Thresholds (lbs/day)

Pollutant	Construction	Operations
ROG	75	55
NOx	100	55
CO	550	550
PM-10	150	150
PM-2.5	55	55
SOx	150	150
Lead	3	3

Source: SCAQMD CEQA Air Quality Handbook, November, 1993 Rev.

ADDITIONAL INDICATORS

In its CEQA Handbook, the SCAQMD also states that additional indicators should be used as screening criteria to determine the need for further analysis with respect to air quality. The additional indicators are as follows:

- Project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation

- Project could result in population increases within the regional statistical area which would be in excess of that projected in the AQMP and in other than planned locations for the project's build-out year.

- Project could generate vehicle trips that cause a CO hot spot.

The SCAQMD CEQA Handbook also identifies various secondary significance criteria related to toxic, hazardous, or odorous air contaminants. Such pollutants may be associated with demolition of existing structures if they contain asbestos, lead-based paint, or other hazardous building materials. Hazardous air contaminants are also contained within the small diameter particulate matter ("PM-2.5") fraction of diesel exhaust. Such exhaust will be generated by heavy construction equipment and by diesel-powered delivery trucks.

For PM-2.5 exhaust emissions, recently adopted policies require the gradual conversion of delivery fleets to low emissions diesel alternatives, or the use of "clean" diesel if emissions are demonstrated to be as low as those from alternative fuels. Because health risks from toxic air contaminants (TAC's) are cumulative over an assumed 70-year lifespan, measurable off-site public health risk from TAC exposure would occur for only a brief portion of a project lifetime, and only in dilute quantity.

Because emissions-based thresholds are primarily applicable to regional pollution exposure, the SCAQMD has developed localized exposure criteria as additional suggested significance indicators. These thresholds are based on allowable air pollution increments under various SCAQMD rules. For "attainment" pollutants such as NO2 or CO or sulfates, a local impact is considered significant if it causes or contributes to a violation of an AAQS. For non-attainment particulate pollutants (PM-10 or PM-2.5), an incremental increase may be significant. The EPA has recently rescinded the national AAQS for PM-10 because it is not as directly related to health effects as PM-2.5. For purposes of analysis, the SCAQMD incremental increase of PM-2.5 is therefore the local impact threshold to be applied to the proposed project. (SCAQMD, 2006: Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 significance thresholds.) The 24-hour PM-2.5 significance threshold is as follows:

Construction	-	10.4 $\mu g/m^3$
Operations	-	2.5 $\mu g/m^3$

SENSITIVE RECEPTORS

Air quality impacts are analyzed relative to those persons with the greatest sensitivity to air pollution exposure. Such persons are called "sensitive receptors". Sensitive population groups include young children, the elderly, and the acutely and chronically ill (especially those with cardio-respiratory disease).

Residential areas are considered to be sensitive to air pollution exposure because they may be occupied for extended periods, and residents may be outdoors when exposure is highest. Schools are similarly considered to be sensitive receptors. Commercial uses are considered less sensitive to air pollution exposure because they are populated by mainly healthy adults for limited periods in an indoor environment. Many sensitive receptors are in the project vicinity. Residential uses border the property on the east, south and west sides. Two schools are located near the project site, but not immediately adjacent. Because residential uses are considered equally sensitive to schools, and because the nearest residences are closer than off-site schools, residential exposure was evaluated as the potentially maximally impacted sensitive receptor.

Many mobile air pollutants require additional transformation to convert into their most unhealthful forms. That conversion process occurs several hours later and miles away. Localized sensitive receptor impacts thus derive mainly from "primary" pollutants that require no additional transformation. Primary pollutants include particulate matter (both from soil dust and from diesel exhaust) and carbon monoxide (CO). Project-related emissions of nitrogen oxides

(NOx) or reactive organic gases (ROG), contributors to regional smog formation, are less critical in local sensitive receptor exposure.

CONSTRUCTION ACTIVITY IMPACTS

Dust is normally the primary concern during construction of new buildings and infrastructure. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions." Emission rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). These parameters are not known with any reasonable certainty prior to project development and may change from day to day. Any assignment of specific parameters to an unknown future date is speculative and conjectural.

Because of the inherent uncertainty in the predictive factors for estimating fugitive dust generation, regulatory agencies typically use one universal "default" factor based on the area disturbed assuming that all other input parameters into emission rate prediction fall into midrange average values. This assumption may or may not be totally applicable to site-specific conditions on the proposed project site. As noted previously, emissions estimation for project-specific fugitive dust sources is therefore characterized by a considerable degree of imprecision.
Site redevelopment will not require extensive grading or other major soil disturbance because the project site has previously been graded. Dust emissions from redevelopment are typically lower than from construction on undeveloped property. Unfortunately, accurate estimation of daily dust (PM-10) emissions requires a detailed knowledge of volumes of material to be handled, silt content, wind speed, vehicle weight, travel speed and other input factors. These parameters cannot be predicted with adequate certainty. They vary from hour to hour, and from one contractor to another. In the absence of definitive data, PM-10 emissions from construction activities are often made using generic "default" estimates based only upon the acreage disturbed. This approach, however, obscures the difference in lesser dust generation from a redevelopment project versus greater dust generation for new construction from an identically sized project on virgin soil.

Average daily PM-10 emissions during site grading and other disturbances are stated in the SCAQMD Handbook to be 26.4 pounds/acre. This estimate is based upon required dust control measures in effect in 1993 when the AQMD CEQA Air Quality Handbook was prepared. Rule 403 was subsequently strengthened to require use of a greater array of fugitive dust control on construction projects. All construction projects in the Los Angeles Basin are required to use strongly enhanced control procedures. Use of enhanced dust control procedures such as continual soil wetting, use of supplemental binders, early paving, etc. can achieve a substantially higher PM-10 control efficiency. Daily emissions with use of best available control measures (BACMs) for PM-10 can reduce emission levels to around ten (10) pounds per acre. The California Air Resources Board URBEMIS2002 computer model now considers the 10 pound per acre per day as the “default” rate with considerably lower rates achievable with additional mitigation.

For the proposed project, the URBEMIS2002 model predicts that 8.8 acres could be under simultaneous heavy construction at some point during the build-out lifetime of the project. With

the use of only minimum construction dust control, daily PM-10 emissions during site grading could reach 232 pounds per day (8.8 X 26.4 = 232 lb/day). The SCAQMD significance threshold of 150 pounds per day would be exceeded. With the use of Reasonably Available Control Measures (RACM), daily PM-10 emissions are reduced to 88 pounds per day (8.8 X 10 = 88 lb/day), under the threshold. The URBEMIS2002 model predicts that use of best available control measures (BACMs) can reduce the surface disturbance PM-10 emissions rate to only 2-3 pounds per acre per day. The model predicts that PM-10 emissions from fugitive dust associated with demolition, clearing and grading can be reduced from 88.0 pounds per day for an average 8.8 acre disturbance area down to 26.4 pounds per day (URBEMIS2002 model output in appendix). Because of the non-attainment status of the air basin, use of all available BACM's is required by Rule 403 even if PM-10 significance thresholds will not be exceeded without the use of BACMs.

Current research in particulate-exposure health suggests that the most adverse effects derive from ultra-small diameter particulate matter comprised of chemically reactive pollutants such as sulfates, nitrates, or organic material. A new national clean air standard for particulate matter of 2.5 microns or smaller in diameter (called "PM-2.5") was adopted in 1997. L ittle construction activity particulate matter is in the PM-2.5 range. The SCAQMD (2006) states that 20.8 percent of construction activity PM-10 should be considered as PM-2.5, but recent studies suggest this fraction is likely lower (MRI, Proposed Revisions to Find Fraction Ratios Used for AP-42 Fugitive Dust Emissions Factors). Application of the current SCAQMD recommended PM-2.5 ratio predicts the following construction activity PM-2.5 emissions relative to the 55 pound per day PM-2.5 significance threshold:

	Fugitive Dust*	Equip. Exhaust**	Total
Without Upgraded Mitigation	18.3	3.4	21.7
With Upgraded Mitigation	5.5	0.9	6.4

*=PM-10 x 0.208
**= during grading

Each scenario will generate a less-than-significant level of PM-2.5. However, because observed adverse health effects are primarily within the sub-2.5 micron size range (House Committee on Science and Technology Hearings, May 8, 2002), upgraded mitigation to minimize PM-2.5 emissions are recommended to mitigate a potentially adverse impact.

In addition to fine particles that remain suspended in the atmosphere semi-indefinitely, construction activities generate many larger particles with shorter atmospheric residence times. This dust is comprised mainly of large diameter inert silicates that are chemically non-reactive and are further readily filtered out by human breathing passages. These fugitive dust particles are therefore more of a potential soiling nuisance as they settle out on parked cars, outdoor furniture, or landscape foliage rather than being any adverse health hazard. The deposition distance of most such dust particles is very close to the source (typically 100 feet). There are several substantial concentrations of dust-sensitive receptors within the primary dust deposition impact zone.

Exhaust emissions will result from on and off-site heavy equipment. The types and numbers of equipment will vary among contractors such that such emissions cannot be quantified with

certainty. Equipment exhaust emissions were calculated presuming that grading will be balanced on-site, and that initial heavy grading and infrastructure development will gradually shift toward building construction and then for finish construction, paving, landscaping, etc. The URBEMIS 2002 computer model was used to calculate emissions from the following prototype construction equipment fleet:

Demolition	**Grading**	**Construction**	**Finish**
Concrete Saws (2)	Tractors/Backhoes (1)	Crane (1)	Paver (1)
Crushing Equip. (1)	Grader (1)	Forklift (1)	Roller (1)
Dozer (1)	Off Hwy. Tractors (2)	Tractors/Backhoes (2)	Other (1)
Loader (1)	Rubber Tired Dozer (1)	Trencher (1)	
Other (1)	Loader (1)	Other (1)	

The California ARB's URBEMIS2002 computer model predicts the following daily emissions during construction from initial demolition, from site clearing, grading and utility excavation, from new building construction, and from finish work to paint the buildings, pave the parking lots, and to install landscaping without the use of upgraded mitigation. Because these functions are sequential, there will be little or no overlap between various construction stages. These emissions estimates are based upon "default' control factors in the URBEMIS2002 computer model. With the additional available mitigation levels of NOx and particulate matter (PM-10 and PM-2.5) will be lower if such mitigation is implemented.

Construction Activity Emissions (pounds/day)

Activity	**ROG**	**NOx**	**CO**	**SO_2**	**PM-10 Total**	**PM-10 Exhaust**	**PM-10 Dust**	**PM-2.5***
Demolition**	12.9	109.1	94.0	0.5	30.6	4.2	26.4	9.7
Grading	11.2	79.8	86.2	0.0	91.4	3.4	88.0	21.7
Construction	6.9	43.5	57.4	0.0	1.7	1.6	0.1	1.6
Paving & Finish	26.6	29.8	39.6	0.0	1.0	1.0	0.1	1.0
SCAQMD Threshold	75	100	550	150	150	-	-	55

*All exhaust PM-10 plus 0.208 x fugitive PM-10

**Demolition phase projections include 1157 Vehicle Miles Traveled (VMT) of on-road truck travel for debris disposal and demolition of 2,500,000 cubic feet of building volume.

None of the emissions for any construction activity pollutants except NOx during demolition will exceed the SCAQMD significance thresholds. The predicted 9.1 pounds per day of excess NOx can be reduced to less-than-significant levels by measures specified in the project mitigation requirements. The use of clean fuels and low-NOx tune-ups can reduce demolition equipment

and on-road debris hauling to 97.3 pounds per day (less-than-significant). The mobile nature of the on-site construction equipment and off-site trucks will prevent any micro-scale violation of standards. As with PM-10 emissions, the non-attainment status of the air basin and the cumulative impact of all regional construction suggests that all reasonably available control measures for diesel exhaust should be implemented even if individual thresholds are not exceeded.

Emissions of ROG, CO and SO2 will remain well below their applicable thresholds of significance. ROG emissions will be greatest during the application of paints and coatings. Use of low-VOC coatings required by SCAQMD rules is presumed to be mandatory in developing the above emissions estimates (SCAQMD Rule 1113).

Construction equipment exhaust contains carcinogenic compounds within the diesel exhaust particulates. The toxicity of diesel exhaust is evaluated relative to a 24-hour per day, 365 days per year, 70-year lifetime exposure. Public exposure to heavy equipment operating in the distance will be an extremely small fraction of the above dosage assumption. Diesel equipment is also becoming progressively "cleaner" in response to air quality rules on new off-road equipment. Diesel exhaust emissions from up to (6) pieces of heavy equipment operating on-site will be dwarfed by diesel exhaust from a large fleet of diesel trucks passing the site each day on the I-10 Freeway to the north. Any public health risk associated with project-related heavy equipment operations exhaust is therefore not quantifiable, but small. However, because of the cumulative impact from large amounts of freeway diesel exhaust, use of reasonably available control measures to reduce equipment-related diesel particulate matter (DPM) from project construction equipment is recommended.

Off-Site Improvement Construction

Several infrastructure improvements are planned to provide upgraded utility and transportation amenities to better serve the project site. Improvements may include increased pipeline capacity, utility relocation, or turning lane additions. The degree of overlap with on-site project construction is not known. The most equipment intensive on-site activities such as building demolition and site grading may be completed by the time off-site improvements are undertaken. Off-site construction will likely occur during on-site building erection and finish construction when on-site equipment emissions are less than the maximum that will occur during demolition and grading. The margin between on-site emissions during later-phase activities and the SCAQMD recommended CEQA significance threshold, as well as the physical distance separation, may be able to accommodate off-site improvement construction without exceeding those thresholds.

As part of the SCAQMD Environmental Justice initiative, the air district has developed air quality threshold levels to insure that no economically or socially disadvantaged community is exposed to any disproportionate share of additional air pollution. The SCAQMD has recommended that these local significance thresholds (LST) be applied to CEQA analyses for both construction and project operations anywhere in the air basin. Use of LST's is optional and voluntary for CEQA air quality impact analysis. A community such as Ontario is not socially or economically disadvantaged. Although the City of Ontario is heavily Hispanic, the City ranks Number 1 in retail sales in the Inland Empire (Community Profile, John Heesing, PhD, 2001-02). The median income in Ontario is seven (7) percent above the San Bernardino County average. The development of the New Model Colony is introducing a substantial stock of higher end housing. There are no major concentrations of sources of air toxic emissions in the City based upon ARB documentation. Project-related emissions have therefore been compared to LST thresholds as an information item, but not as an applicable impact significance threshold for projects in the City of Ontario.

SCAQMD LST guidelines provide look-up tables for projects up to five acres in size. The use of dispersion modeling is recommended for larger projects. However, if larger project construction activities do not generate emissions exceeding the thresholds for smaller-sized projects, they will meet LST guidelines with an even larger margin of safety. For project construction activity, the individual construction project emissions compared to the 5-acre guidelines for an assumed 100 meter separation between the average area of construction and the nearest receptors are as follows (pounds/day):

Western SB County:	**CO**	**NOx**	**Fugitive Dust PM-10**	**Exhaust PM-2.5***
LST Threshold (5 acres)	2,508	550	141	17
Proposed Project	94	109	91	22
Proposed Project Mitigated	94	97	27	6

*=grading exhaust plus 0.208 x fugitive dust

CO and NOx emissions are well below the LST threshold for even a 5-acre disturbance area. For the 8.8 acre simultaneous disturbance area, the margin of safety will be even larger. No emissions during construction, without or with use of upgraded mitigation, will exceed the screening threshold for even a 5 acre grading area. A more advanced LST impact analysis for construction activities is not considered necessary because use of LSTs is voluntary, and project construction will not exceed screening level thresholds for any pollutants.

Construction activity air quality impacts occur mainly in close proximity to the surface disturbance area. There may, however, be some "spill-over" into the surrounding community. That spill-over may be physical as vehicles drop or carry out dirt or silt is washed into public streets. Passing non-project vehicles then pulverize the dirt to create off-site dust impacts. "Spillover" may also occur via congestion effects. Construction may entail roadway encroachment, detours, lane closures and competition between construction vehicles (trucks and contractor employee commuting) and ambient traffic for available roadway capacity. Emissions controls require good housekeeping procedures and a construction traffic management plan that will maintain such "spill-over" effects at a less-than-significant level.

REGIONAL MOBILE SOURCE IMPACTS

By far, the greatest project-related air quality concern derives from the mobile source emissions that will be generated from commercial activities proposed for the project site. At the Wal-Mart Supercenter build-out, daily trip generation is estimated to be 7,980 ADT from combined shopper, delivery traffic and employee travel. The SCAQMD calculates that the average one-way trip length of shoppers and employees is 5.5 miles. Project implementation could add approximately 45,000 vehicle miles traveled (VMT) to the existing regional VMT burden of around 300 million VMT per day. Project energy demand met by burning fossil fuels in regional power plants will add a small NOx increment from project operations and add very minute amounts of other pollutants.

Operational emissions for project-related traffic were calculated using a computerized procedure developed by the California Air Resources Board (CARB) for urban growth mobile source emissions. The URBEMIS2002 model was run using the trip generation factors specified by the project traffic consultant for this specific project. The model was used to calculate area source emissions and the resulting operational emissions for three 2008 operational scenarios; site development with 1997 Specific Plan land uses, site development with approved site uses (Target, Toys R Us and Food 4 Less) and site development with the proposed project. The results are shown in Table 5. Table 6 provides a direct comparison of the three alternatives.

All proposed land uses will cause SCAQMD's advisory thresholds to be exceeded for ROG, NOx and CO except for ROG for the proposed project scenario. Air quality significance therefore, will be relative in terms of magnitude. From the data in Tables 5 and 6 we can infer that:

1. Existing zoned use for the site would cause the most air quality impact in terms of vehicular emissions. If the now closed Target, Toy's R Us and Food 4 Less were still operational in 2008; ROG, NOx and CO would exceed thresholds by a larger margin than any alternative siting analyzed. Pollutant emissions would be approximately 22% greater than with the proposed project

2. Projected 2008 operational (vehicular) emissions with the shopping center approved in the 1997 Specific Plan would also be larger than those predicted for the Wal-Mart Supercenter for the same year. Pollutants would be approximately 17% greater for this alternative compared to the proposed project.

3. The cleanest operational scenario of the three land use alternatives examined is that of the Wal-Mart Supercenter. While thresholds for NOx and CO would still be exceeded, they would do so by less of a margin than the alternative uses (Table 6).

The project with the least regional air pollution impact in 2008 is predicted to be the proposed Wal-Mart Supercenter. The Wal-Mart Supercenter operational air quality impacts may be significant, but are less detrimental that the two analyzed alternative land uses. All site uses will create air emissions (mainly from vehicular sources) that will delay the ultimate attainment of all

clean air standards. However, the regional air quality plan predicts the ability to meet clean air standards within specified timeframes as long as the rate of growth predicted for the region is not exceeded. This site was previously developed with a use causing more air quality impacts than the proposed use.

Although the proposed project would generate fewer regional emissions than any potential development scenario, substantial emissions of ozone precursor emissions will occur in a non-attainment area compared to existing emissions. Table 2 shows that ozone has a number of adverse effects, including aggravation of respiratory disease, eye irritation, cardiovascular impairment and plant leaf injury. When NOx is first released, it is primarily as NO which is not considered a criteria air pollutant by itself. NOx becomes itself harmful when it converts to NO_2 or when it participates in the ozone formation process. These conversions occur over time far from the project site. There is no health risk associated with NOx emissions above threshold in the immediate project vicinity.

CO emissions above the SCAQMD threshold could be potentially harmful in the formation of air pollution “hot spots.” However, a screening level hot spot analysis was performed for all major intersections in the project vicinity as detailed below. No hot spots were found. The air quality impacts from project-related vehicular emissions above the SCAQMD are therefore completely regional in nature. No health risk assessment for NOx or CO above the SCAQMD CEQA thresholds is therefore possible except to note the regional impact of NOx.

Table 5
Average Daily Project Mobile Source
Air Pollution Emissions
(pounds/day)

2008 w/Existing Use	**ROG**	**NOx**	**CO**	**PM-10**	**SOx**	**PM-2.5***
Area Source Emissions	2.9	1.8	2.3	0.0	0.0	0.0
Operational Emissions	64.9	86.6	892.7	89.2	0.6	15.1
TOTAL	**67.8**	**88.4**	**895.0**	**89.2**	**0.6**	**15.1**
SCAQMD Significance Threshold	55	55	550	150	150	55
Exceeds Threshold?	Yes	Yes	Yes	No	No	No
Percent of Threshold	123	160	162	60	<1	27

2008 w/ 1997 Specific Plan Alternative	**ROG**	**NOx**	**CO**	**PM-10**	**SOx**	**PM-2.5***
Area Source Emissions	4.0	2.6	2.9	0.0	0.0	0.0
Operational Emissions	60.9	79.1	816.1	81.5	0.5	13.8
TOTAL	**64.9**	**81.7**	**819.0**	**81.5**	**0.5**	**13.8**
SCAQMD Significance Threshold	55	55	550	150	150	55
Exceeds Threshold?	Yes	Yes	Yes	No	No	No
Percent of Threshold	118	149	149	54	<1	25

2008 w/ Proposed Project	**ROG**	**NOx**	**CO**	**PM-10**	**SOx**	**PM-2.5***
Area Source Emissions	2.9	1.8	2.3	0.0	0.0	0.0
Operational Emissions	50.1	65.8	678.1	67.7	0.4	11.4
TOTAL	**53.0**	**67.6**	**680.4**	**67.7**	**0.4**	**11.4**
SCAQMD Significance Threshold	55	55	550	150	150	55
Exceeds Threshold?	No	Yes	Yes	No	No	No
Percent of Threshold	96	123	124	45	<1	21

Source: URBEMIS2002, Output in Appendix.
* = assuming PM-2.5=0.169 x PM-10

Table 6

Project Alternative Comparison
Total Emissions (pounds/day)

Land Use Alternative	ROG	NOx	CO	PM-10	SOx	PM-2.5
2008 w/ Existing Use	67.8	88.4	895.0	89.2	0.6	15.1
2008 w/ 1997 Specific Plan Use	64.9	81.7	819.0	81.5	0.5	13.8
2008 w/ Proposed Project	53.0	67.6	680.4	67.7	0.4	11.4

MICROSCALE ANALYSIS

Micro-scale air quality impacts have traditionally been analyzed in environmental documents where the air basin was a non-attainment area for carbon monoxide (CO). However, the SCAQMD has demonstrated in the CO attainment re-designation request to EPA that there are no "hot spots" anywhere in the air basin, even at intersections with much higher volumes, much worst congestion, and much higher background CO levels than anywhere in Ontario. If the worst-case intersections in the air basin have no "hot spot" potential, any local impacts near the facility will be well below thresholds with an even larger margin of safety.

To verify this conclusion, a CO screening analysis was performed at the intersections of Mountain Avenue and 6th, 5th, and 4th Streets. One-hour CO concentrations were calculated on the sidewalks adjacent to these three intersections. Peak one-hour levels (ppm above background) were as follows:

One-Hour CO Concentrations (ppm)

Intersections	Existing	2008	2008 w/1997 Land Use	2008w/ Existing Land Use	2008 w/Project
AM Peak Hours					
Mountain/ 6th	1.8	1.7	1.9	1.9	1.9
Mountain/5th	1.7	1.6	1.7	1.7	1.7
Mountain/4th	1.6	1.5	1.6	1.6	1.6
PM Peak Hour					
Mountain/ 6th	2.7	2.6	3.0	3.1	2.9
Mountain/5th	2.1	2.0	2.2	2.3	2.2
Mountain/4th	2.1	2.0	2.1	2.2	2.1

Existing peak one-hour CO background levels are 3.0 ppm. Combined worst-case background (3.0 ppm) plus local (2.9 ppm for 2008 with project) equate to CO levels of 5.9 ppm, which are far below the one-hour standard of 20 ppm. Worst-case one hour combined levels are even lower than the allowable 8-hour exposure of 9 ppm. Micro-scale impacts are less than significant.

DIESEL RISK ASSESSMENT

The proposed project will be serviced by diesel-fueled tractor-trailer delivery trucks. Diesel exhaust particulate matter is a know carcinogen. The following weekly diesel semi-truck delivery schedule is expected from the Wal-Mart distribution center:

Usage:	Type:	No. Weekly Deliveries:
General Merchandise	Semi-Trucks	22
Grocery	Semi-Trucks	13

For toxic air contaminants (TACs), the SCAQMD has published the following individual cancer risk significance thresholds:

< 1.0 in a million = Insignificant 1.0-10 in a million = Insignificant if best available control technology has been used >10 in a million = Significant

Approximately 35 Wal-Mart semi-trucks will visit the project site weekly. Assuming a 6 day week delivery window there will be 6 trucks per day onsite, 3 delivering to each of the two loading dock areas. Therefore, a health risk screening analysis for 3 daily diesel truck deliveries was performed using the EPA SCREEN3 computer model. If the screening analysis using conservative impact assumptions demonstrates no significant health risk to off-site residences, schools and other sensitive receptors, no formal health risk assessment (HRA) is required. The results of the screening study, shown in the appendix, predict a risk for nearby sensitive receptors of 0.090 in a million. This is less than the risk significance threshold. Risk for diesel exhaust exposure is less-than-significant.

This screening analysis predicted an excess cancer risk from 35 Wal-Mart semi-trucks at well below the significance threshold. The analysis assumed that exhaust emissions will be spread throughout the site instead of focusing them at the loading docks. The analysis also did not include vendor vehicles such as soft drinks, beer or bottled water that might be diesel fueled. A more sophisticated HRA was therefore undertaken.

The Industrial Source Complex (ISC) computer model was used to calculate the diesel particulate matter (DPM) exposure from diesel delivery truck operations. In addition to the 35 weekly Wal-Mart delivery trucks, it was also assumed that 35 vendor trucks will be diesel-fueled (soft drinks, bottled water, beer, etc.). Each truck was assumed to idle 10 minutes on-site (5 minute idling is the maximum allowed by law during each activity), and to spend 4 minutes each (2 minutes in, 2 minutes out) in traversing the site. The EMFAC2007 computer model was used to estimate idling and running emissions from 10 diesel trucks per day (70 per week) between 2008 and 2077 (70 year analysis protocol).

The maximum excess cancer risk for a person that remains outside their home for 70 years for 365 days per year for 24 hours per day due to project site DPM emissions is shown in the model print-out in the appendix to be 0.41 in a million. The point of maximum exposure is the apartment buildings west of the northern loading dock. As noted above, any risk of less than one in a million is less-than-significant. When the unrealistic assumption of a person chained to their front porch from cradle to grave is additionally modified, the margin of exposure safety increases dramatically. Diesel truck delivery activities will not expose any off-site residents to a significant DPM exposure risk.

HAZARDOUS MATERIAL IMPACT

If any existing structures to be demolished or renovated were built when hazardous compounds were routinely used as building products, they may have asbestos containing materials (ACMs), lead based paint (LBP), or other harmful building materials within their structures. Any demolition or renovation requires a pre-construction hazards assessment. Some of the buildings on this site date to 1964 and 1970 when asbestos was still used. If such materials such as asbestos are present, a number of strictly regulated remediation procedures must be implemented. Such mandatory measures are required to protect both remediation workers and the general public. Remediation impacts are therefore less-than-significant through required compliance with existing SCAQMD hazards control regulations.

IMPACT MITIGATION

OPERATIONAL IMPACTS

Operational emissions for the Ontario Wal-Mart Supercenter may cause thresholds for NOx and CO to be exceeded. However, the proposed Wal-Mart Supercenter will exceed these thresholds by less of a margin than the existing zoned use of the site (Target, Food 4 Less, and Toys R Us) or than for the land use approved in the 1997 Specific Plan. The Wal-Mart Supercenter operational air quality impacts may be significant but are less detrimental that the two analyzed alternative land uses.

CONSTRUCTION IMPACTS

Air quality impacts during construction will not exceed significance threshold levels. However, the non-attainment status of the air basin for smog and PM-10 suggests that impacts from all basin-wide construction activities are cumulatively significant. Mitigation is therefore recommended for cumulative construction activity impacts as follows:

1. The simultaneous disturbance site should be minimized as much as possible.

2. The proposed project will comply with SCAQMD established minimum requirements for construction activities to reduce fugitive dust and PM-10 emissions. A plan to control fugitive dust through the implementation of best available control measures shall be prepared and submitted to the City of Ontario for approval prior to the issuance of demolition and grading permits. The plan should specify the dust control measures to be implemented.

3. The project proponent shall comply with all applicable SCAQMD Rules and Regulations including Rule 403 insuring the clean up of construction-related dirt on approach routes to the site. Rule 403 prohibits the release of fugitive dust emissions from any active operation, open storage pile or disturbed surface area visible beyond the property line of the emission source. Particulate matter deposition on public roadways is also prohibited.

4. The proposed project should also comply with SCAQMD Rule 1403 as part of demolition remediation.

5. Adequate watering techniques should be employed to mitigate the impact of construction-related dust particulates. Portions of the site that are undergoing earth moving operations should be watered such that a crust will be formed on the ground surface, and then watered again at the end of each day. The minimum watering frequency for exposed surfaces shall be three times daily.

6. Any vegetative cover to be utilized onsite should be planted as soon as possible to reduce the disturbed area subject to wind erosion. Irrigation systems required for these plants should be installed as soon as possible to maintain good ground cover and to minimize wind erosion of the soil.

7. Inactive sites shall be stabilized and all stockpiles of material shall be covered if left unattended for more than 72 hours.

8. Any construction access roads (other than temporary access roads) should be paved as soon as possible and cleaned after each work day. The maximum vehicle speed on unpaved roads should be 15 mph.

9. Grading operations should be suspended during first stage ozone episodes or when winds exceed 25 mph. A high wind response plan should be formulated for enhanced dust control if winds are forecast to exceed 25 mph in any coming 24-hour period.

10. Any construction equipment using direct internal combustion engines should use a diesel fuel with a maximum of 0.05 percent sulfur. Preference shall be given to construction contractors who are able to provide heavy equipment equipped with Tier-3 rated diesel engines, or those equipped with oxidation catalysts to reduce NOx.

11. Construction operations affecting off-site roadways should be scheduled by implementing traffic hours and shall minimize obstruction of through-traffic lanes.

12. Idling trucks or heavy equipment should turn off their engines if the expected duration of idling exceeds five (5) minutes as required by law.

13. On-site heavy equipment used during grading and construction should be equipped with diesel particulate filters unless it is demonstrated that such equipment is not available or its use is not cost-competitive.

14. All building construction should comply with energy use guidelines in Title 24 of the California Code of Regulations.

15. The use of energy efficient street lighting and parking lot lighting should be required for all on-site travel paths to reduce emissions at the power generation facility serving the area.

The net effectiveness of cumulative impact mitigation during construction is quantified as follows:

Activity Year	**ROG**	**NOx**	**CO**	**SO_2**	**PM-10 Total**	**PM-10 Exhaust**	**PM-10 Dust**	**PM-2.5**
2007 – No Mitigation	12.9	109.1	94.0	0.1	92.3	4.3	88.0	22.6
2007 - w/ Mitigation	12.9	97.3	94.0	0.1	27.3	0.9	26.4	6.4
2008 – No Mitigation	33.5	73.3	97.0	0.0	2.8	2.6	0.2	2.6
2008 – w/ Mitigation	33.5	73.3	97.0	0.0	0.7	0.6	0.1	0.6
SCAQMD Threshold	75	100	550	150	150	-	-	55

All emissions will be reduced to less-than-significant by recommended mitigation measures.

DIESEL RISK EXPOSURE

The diesel risk screening assessment for residents adjacent to any commercial use building within the project is less-than-significant. However, because the screening analysis only considered Wal-Mart trucks and not contract vendors, and because the screening analysis assumed diesel emissions are diffusely scattered over the site instead of concentrated at two loading docks, a more formal health risk analysis (HRA) using hour-by-hour dispersion modeling was performed. The results of the HRA are summarized in a separate document. The maximum exposed individual will experience an excess cancer risk of 0.41 in a million. Any risk of less than one in a million is considered *de minimis* by the SCAQMD. Additional mitigation is not required to reduce public health risk from diesel delivery trucks.

APPENDIX

URBEMIS2002 Computer Model Output

Diesel Exhaust Analysis

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Ontario WalMart.urb
Project Name: WalMart Superstore
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

*** 2007 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	12.88	109.11	93.99	0.05	92.26	4.25	88.01
TOTALS (lbs/day, mitigated)	12.88	97.29	93.99	0.05	27.24	0.86	26.38

*** 2008 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	33.47	73.27	96.97	0.00	2.77	2.64	0.13
TOTALS (lbs/day, mitigated)	33.47	73.27	96.97	0.00	0.69	0.56	0.13

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	2.93	1.85	2.33	0.00	0.01

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	50.08	65.75	678.10	0.44	67.73

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOX	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	53.01	67.60	680.43	0.44	67.74

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\Ontario WalMart.urb
Project Name: WalMart Superstore
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

Construction Start Month and Year: July, 2007
Construction Duration: 18
Total Land Use Area to be Developed: 0 acres
Maximum Acreage Disturbed Per Day: 8.8 acres
Single Family Units: 0 Multi-Family Units: 0
Retail/Office/Institutional/Industrial Square Footage: 190803

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2007***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	26.25	-	26.25
Off-Road Diesel	11.37	84.43	85.59	-	3.66	3.66	0.00
On-Road Diesel	1.37	24.51	5.11	0.05	0.70	0.58	0.12
Worker Trips	0.14	0.17	3.29	0.00	0.02	0.01	0.01
Maximum lbs/day	12.88	109.11	93.99	0.05	30.63	4.25	26.38
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	88.00	-	88.00
Off-Road Diesel	11.11	79.81	85.61	-	3.38	3.38	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.05	0.03	0.57	0.00	0.01	0.00	0.01
Maximum lbs/day	11.16	79.84	86.18	0.00	91.39	3.38	88.01
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Bldg Const Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max lbs/day all phases	12.88	109.11	93.99	0.05	92.26	4.25	88.01
*** 2008***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	6.60	43.38	53.31	-	1.60	1.60	0.00
Bldg Const Worker Trips	0.33	0.19	4.09	0.00	0.06	0.00	0.06
Arch Coatings Off-Gas	21.39	-	-	-	-	-	-
Arch Coatings Worker Trips	0.33	0.19	4.09	0.00	0.06	0.00	0.06
Asphalt Off-Gas	0.40	-	-	-	-	-	-
Asphalt Off-Road Diesel	4.31	28.04	34.93	-	1.00	1.00	0.00
Asphalt On-Road Diesel	0.08	1.46	0.28	0.00	0.03	0.03	0.00
Asphalt Worker Trips	0.02	0.01	0.27	0.00	0.00	0.00	0.00
Maximum lbs/day	33.47	73.27	96.97	0.00	2.77	2.64	0.13
Max lbs/day all phases	33.47	73.27	96.97	0.00	2.77	2.64	0.13

Phase 1 - Demolition Assumptions
Start Month/Year for Phase 1: Jul '07
Phase 1 Duration: 2 months
Building Volume Total (cubic feet): 2500000
Building Volume Daily (cubic feet): 62500
On-Road Truck Travel (VMT): 1157
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Concrete/Industrial saws	84	0.730	8.0
1	Crushing/Processing Equip	154	0.780	8.0
1	Other Equipment	190	0.620	8.0
1	Rubber Tired Dozers	352	0.590	8.0
1	Rubber Tired Loaders	165	0.465	8.0

Phase 2 - Site Grading Assumptions
Start Month/Year for Phase 2: Sep '07
Phase 2 Duration: 4 months
On-Road Truck Travel (VMT): 0
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Graders	174	0.575	8.0
2	Off Highway Tractors	255	0.410	8.0
1	Rubber Tired Dozers	352	0.590	8.0
1	Rubber Tired Loaders	165	0.465	8.0
1	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions
Start Month/Year for Phase 3: Jan '08
Phase 3 Duration: 12 months
Start Month/Year for SubPhase Building: Jan '08
SubPhase Building Duration: 12 months
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Cranes	190	0.430	8.0
1	Other Equipment	190	0.620	8.0
1	Rough Terrain Forklifts	94	0.475	8.0
2	Tractor/Loaders/Backhoes	79	0.465	8.0
1	Trenchers	82	0.695	8.0

Start Month/Year for SubPhase Architectural Coatings: Jul '08
SubPhase Architectural Coatings Duration: 6 months
Start Month/Year for SubPhase Asphalt: Oct '08
SubPhase Asphalt Duration: 3 months
Acres to be Paved: 10
Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
1	Other Equipment	190	0.620	8.0
1	Pavers	132	0.590	8.0
1	Rollers	114	0.430	8.0

AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.13	1.84	1.55	0	0.00
Hearth - No summer emissions					
Landscaping	0.12	0.00	0.78	0.00	0.00
Consumer Prdcts	0.00	-	-	-	-
Architectural Coatings	2.67	-	-	-	-
TOTALS(lbs/day,unmitigated)	2.93	1.85	2.33	0.00	0.01

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Free standing discount su	50.08	65.75	678.10	0.44	67.73
TOTAL EMISSIONS (lbs/day)	50.08	65.75	678.10	0.44	67.73

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2008 Temperature (F): 90 Season: Summer

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Free-standing discount su		41.83 trips/1000 sq. ft.	190.80	7,980.91

Sum of Total Trips 7,980.91
Total Vehicle Miles Traveled 44,661.16

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	55.00	1.60	98.00	0.40
Light Truck < 3,750 lbs	15.00	2.70	95.30	2.00
Light Truck 3,751- 5,750	16.20	1.20	97.50	1.30
Med Truck 5,751- 8,500	7.20	1.40	95.80	2.80
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.40	0.00	50.00	50.00
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.70	76.50	23.50	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.20	8.30	83.30	8.40

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Trip Speeds (mph)	35.0	40.0	40.0	40.0	40.0	40.0
% of Trips - Residential	20.0	37.0	43.0			
% of Trips - Commercial (by land use)						
Free standing discount superstore				2.0	1.0	97.0

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Construction

The user has overridden the Default Phase Lengths
Demolition Truck Hauling Miles/Round Trip changed from 30 to 10
Architectural Coatings: # ROG/ft2 (non-res) changed from 0.0185 to 0.0074
Phase 1 mitigation measure Off-Road Diesel Exhaust: Use aqueous diesel fuel
has been changed from off to on.
Phase 1 mitigation measure Off-Road Diesel Exhaust: Use diesel particulate filter
has been changed from off to on.
Phase 2 mitigation measure Soil Disturbance: Apply soil stabilizers to inactive areas
has been changed from off to on.
Phase 2 mitigation measure Soil Disturbance: Replace ground cover in disturbed areas quickly
has been changed from off to on.
Phase 2 mitigation measure Soil Disturbance: Water exposed surfaces - 3x daily
has been changed from off to on.
Phase 2 mitigation measure Off-Road Diesel Exhaust: Use diesel particulate filter
has been changed from off to on.
Phase 2 mitigation measure Stockpiles: Cover all stock piles with tarps
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Water all haul roads 3x daily
has been changed from off to on.
Phase 2 mitigation measure Unpaved Roads: Reduce speed on unpaved roads to < 15 mph
has been changed from off to on.
Phase 2 mitigation measure Off-Road Diesel Exhaust: Require Tier 3 engines for Equip. > 100 HP
has been changed from off to on.
Phase 3 mitigation measure Off-Road Diesel Exhaust: Use diesel particulate filter
has been changed from off to on.
Phase 3 mitigation measure Off-Road Diesel Exhaust: Use diesel particulate filter
has been changed from off to on.

Changes made to the default values for Area

Changes made to the default values for Operations

The operational emission year changed from 2005 to 2008.

Screening Level

Diesel Truck Cancer Risk Exposure Calculation

Ontario Wal-Mart

Diesel Emissions Significance Thresholds

$<$ 1.0 in a million = Insignificant

1.0-10 in a million = Insignificant if best available control technology has been used

$>$10 in a million = Significant

$_{08}{}^{77}\Sigma\ /70 =$ 0.3419 is the average gm/hour of diesel exhaust at 0 mph/truck calculated for 70 years from EMFAC2007

$_{08}{}^{77}\Sigma\ /70 =$ 0.3463 is the gm/hour of diesel exhaust for diesel truck maneuvering at 3 mph/truck calculated for 70 years from EMFAC2007

Daily Emissions for 3 Diesel Trucks per Day Operating 10 minutes each:

= (3 Diesel Trucks/day) x (0.3419 gm/hour) ÷ (10 min/60 min/hour) = 0.17095 gm/day

Truck Activity Area = 30 m x 60 m= 1800 m^2

Flux for 3 trucks day = 0.17095 gm/day ÷ 1800 m^2 ÷ 86,400 sec/day = 1.1×10^{-9} gm/ m^2/ sec

From SCREEN3 Output:

Max 1-Hour Conc. for Daytime Activity with input flux at 1 gm/ m^2/sec = 0.2735×10^7 $\mu g/m^3$

10% x Peak = Annual = 2.735×10^5 $\mu g/m^3$ / (gm/ m^2/sec flux)

Concentration = $2.735 \times 10^5 \times 1.1 \times 10^{-9} = 0.0003008$ $\mu g/m^3$

Risk = Concentration * Unit Risk Factor (300 per million per ug/m^3 = 0.090 in a million)

Risk is Insignificant (less than 1.0 in a million)