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ALLIANCE CALIFORNIA GATEWAY SOUTH BUILDING 3

MOBILE SOURCE HEALTH RISK ASSESSMENT

CITY OF SAN BERNARDINO, CALIFORNIA

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ALLIANCE CALIFORNIA GATEWAY SOUTH BUILDING 3
MOBILE SOURCE HEALTH RISK ASSESSMENT
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1.0 INTRODUCTION

This report presents the results of the mobile source health risk assessment (HRA) prepared by Urban Crossroads, Inc. for the proposed Alliance California Gateway South Building 3 Project (Project) generally located at the southeast corner of Waterman Avenue and Orange Show Road in the City of San Bernardino as shown on Exhibit 1-1.

The purpose of this HRA is to evaluate Project-related impacts to sensitive receptors (residential, schools) and adjacent workers as a result of heavy-duty diesel trucks accessing the site. For the purposes of this HRA, it is assumed that the Project will be constructed and at full occupancy by 2015.

The South Coast Air Quality Management District (SCAQMD) typically issues a comment letter on the Notice of Preparation of a CEQA Document. Per the SCAQMD's typical comment letter, since the proposed Project is expected to generate/attract diesel trucks, which emit diesel particulate matter (DPM), preparation of a HRA is necessary. This document serves to meet the SCAQMD's request for preparation of a HRA. The mobile source HRA has been prepared in accordance with the document Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis (SCAQMD 2003). Cancer risk is expressed in terms of expected incremental incidence per million population. The SCAQMD has established an incidence rate of ten (10) persons per million as the maximum acceptable incremental cancer risk due to DPM exposure. This threshold serves to determine whether or not a given project has a potentially significant development-specific and cumulative impact.

The AQMD has published a report on how to address cumulative impacts from air pollution: *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution* (August 2003). In this report the AQMD clearly states (Page D-3):

> *"…the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for toxic air contaminant (TAC) emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of*

three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.

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

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

1.1 PROJECT OVERVIEW

The Project is proposed to consist of approximately 1,199,360 square feet (sf) of high-cube distribution warehouse use within a single building. For the purposes of this AQIA, it is assumed that the Project will be constructed and at full occupancy by 2015.

1.2 SUMMARY OF FINDINGS/CONCLUSIONS

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

Residential Exposure Scenario:
The residential land use with the greatest potential exposure to Project DPM source emissions is located adjacent to the site just north of Orange Show Road. At the maximally exposed individual receptor (MEIR), the maximum incremental cancer risk attributable to Project DPM source emissions is estimated at 5.88 in one million, which is less than the threshold of 10 in one million. At this same location, non-cancer risks were estimated to be 0.0037, which would not exceed the applicable threshold of 1.0.

Worker Exposure Scenario:
The worker receptor land use with the greatest potential exposure to Project DPM source emissions is located immediately adjacent to the site just north of Orange Show Road. At the maximally exposed individual worker (MEIW), the maximum incremental cancer risk impact at

this location is 1.15 in one million which is less than the threshold of 10 in one million. Maximum non-cancer risks at this same location were estimated to be 0.004, which would not exceed the applicable threshold of 1.0.

School Child Exposure Scenario:

The school site land use with the greatest potential exposure to Project DPM source emissions is located at the Burbank Elementary School/Soar Charter Academy located approximately one mile (5,280 feet) northwest of the Project site. At the maximally exposed individual school child (MEISC), the maximum incremental cancer risk impact at this location is 0.08 in one million which is less than the threshold of 10 in one million. Maximum non-cancer risks at this same location were estimated to be 0.0001 which would not exceed the applicable threshold of 1.0.

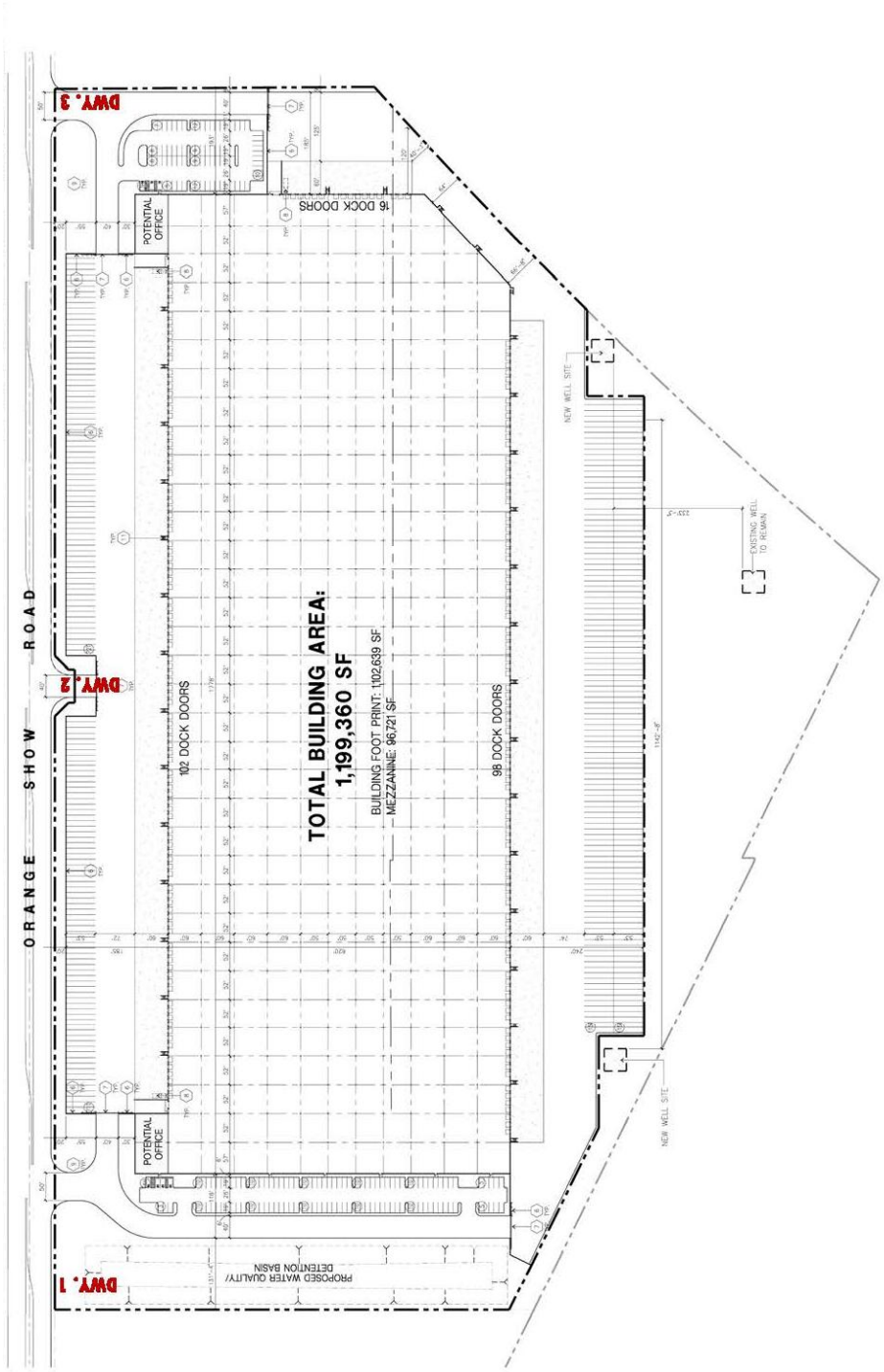
The results of the analysis also indicate that the project will not result in a significant cumulative health risk. Section 2.7 contains a detailed cumulative analysis for the Project.

TABLE 1-1
SUMMARY OF CANCER RISKS (WITHOUT MITIGATION)

Time Period	Location	Maximum Lifetime Cancer Risk (Risk per Million)	Significance Threshold (Risk per Million)	Exceeds Significance Threshold
70 Year Exposure (2015 to 2084)	Maximum Exposed Sensitive Receptor	5.88	10	**NO**
40 Year Exposure (2015 to 2054)	Maximum Exposed Worker Receptor	1.15	10	**NO**
9 Year Exposure (2015 to 2023)	Maximum Exposed School Child	0.08	10	**NO**

EXHIBIT 1-1

SITE PLAN



1.3 REQUIREMENTS

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

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

- **CARB Final Regulation Order, Requirements to Reduce Idling Emissions from New and In-Use Trucks**, beginning in 2008, would require that new 2008 and subsequent model-year heavy-duty diesel engines be equipped with an engine shutdown system that automatically shuts down the engine after 300 seconds of continuous idling operation once the vehicle is stopped, the transmission is set to "neutral" or "park", and the parking brake is engaged[2].

1.4 RECOMMENDED MEASURES

Although Project operations will **not** exceed the risk threshold of 10 in one million established by the SCAQMD, the following measures are consistent with design and operating attributes of contemporary distribution warehouses in the Basin, and are recommended as means to generally reduce local and regional DPM–source cancer risk impacts.

MM AQ-5

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

a) Truck drivers shall turn off engines when not in use;
b) Diesel trucks servicing the Project shall not idle for more than five (5) minutes[3]; and
c) Telephone numbers of the building facilities manager and the CARB to report violations.

[1] http://www.arb.ca.gov/msprog/truck-idling/truck-idling.htm
[2] http://www.arb.ca.gov/msprog/macs/mac0703/mac0703.pdf
[3] While restricted idling is required per MM AQ-5, the analysis presented here takes no quantified credit or reduction in emissions for restricted idling, and reflects an assumed 15-minute "worst case" idling condition.

2.0 BACKGROUND

2.1 REGULATORY SETTING

CARB estimates that the average Californian is exposed to 1.3 mg/m^3 of DPM. This exposure results in an average cancer risk of 390 in one million for the average Californian exposed to DPM (OEHHAA 2000).

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

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

- The risk estimates assume sensitive receptors will be subject to DPM for 24 hours a day, 365 days a year. As a conservative measure, the SCAQMD does not recognize indoor adjustments for residents. However, the typical person spends the majority of their time indoors versus remaining outdoors for 24 hours a day, 365 days a year.[4]

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

- The emissions derived assume that every truck accessing the project site will idle for 15 minutes, this is an overestimation of actual idling times and thus conservative.[5]

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

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

2.2 EMISSIONS ESTIMATION

Vehicle DPM emissions were estimated using emission factors for particulate matter less than 10µm in diameter (PM_{10}) generated with the 2011 version of the Emission FACtor model (EMFAC) developed by the ARB. EMFAC 2011 is a mathematical model that was developed to calculate emission rates from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the ARB to project changes in future emissions from on-road mobile sources. The most recent version of this model, EMFAC 2011, incorporates regional motor vehicle data, information and estimates regarding the distribution of vehicle miles traveled (VMT) by speed, and number of starts per day.

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

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

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

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

The average PM_{10} emission factors for each type of vehicle were calculated based on the annual average emission factors from different model years for various exposure periods associated with assumptions for evaluating exposure to different receptor populations (e.g., sensitive, offsite worker and resident, respectively):

1. 70-year exposure: 2015 through 2084 (Residential Exposure Scenario)
2. 40-year exposure: 2015 through 2054 (Worker Exposure Scenario)

3. 9-yr exposure: 2015 through 2023 (School Child Exposure Scenario)

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

The vehicle DPM exhaust emissions were calculated for running exhaust emissions. The running exhaust emissions were calculated by applying the running exhaust PM_{10} emission factor (g/VMT) from EMFAC over the total distance traveled. The following equation was used to estimate off-site emissions for each of the different vehicle classes comprising the mobile sources:

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

Where:

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

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

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

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

$Emissions_{idle}$ (g/s) = EF_{idle} (g/hr) * Number of Trips (trips/day) * Idling Time (min/trip) * 60 minutes per hour / seconds per day
Where:

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

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

TABLE 2-1

WEIGHTED AVERAGE DPM EMISSION FACTORS

2015-2084 – 70 Year Residential Exposure Scenario	
Speed	Weighted Average
0 (idling)	0.22587 (g/idle-hr)
5	0.07419 (g/s)
25	0.04759 (g/s)
2015-2054 – 40 Year Worker Exposure Scenario	
Speed	Weighted Average
0 (idling)	0.22997 (g/idle-hr)
5	0.07996 (g/s)
25	0.04922 (g/s)
2015-2023 – 9 Year School Child Exposure Scenario	
Speed	Weighted Average
0 (idling)	0.26238 (g/idle-hr)
5	0.12366 (g/s)
25	0.06131 (g/s)

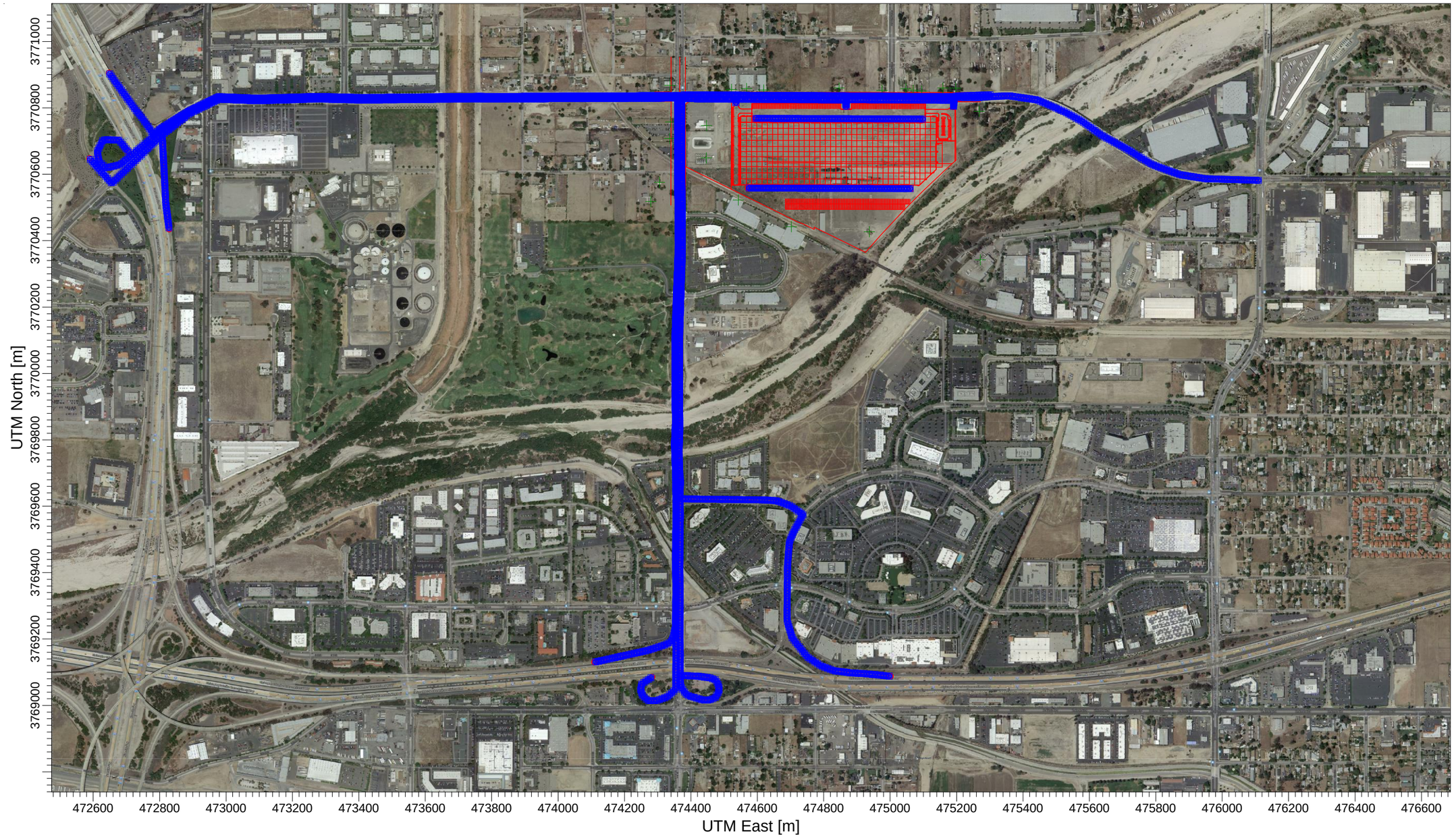
Each roadway was modeled as a line source (made up of multiple adjacent volume sources). Due to the large number of volume sources modeled for this analysis, the corresponding coordinates of each volume source have not been included in this report, but are included in Appendix "A". The DPM emission rate for each volume source was calculated by multiplying the emission factor (based on the average travel speed along the roadway) by the number of trips and the distance traveled along each roadway segment and dividing the result by the number of volume sources along that roadway, as illustrated on Tables 2-2 through 2-4. The modeled emission sources are illustrated on Exhibit 2-1. The modeled truck travel routes included in the HRA are based on the truck trip distributions (inbound and outbound) available from the Project's Traffic Impact Analysis (TIA).

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

[6] Requirements to Reduce Idling Emissions from New and In-Use Trucks: http://www.arb.ca.gov/regact/hdvidle/hdvidle.htm

EXHIBIT 2-1

MODELED EMISSION SOURCES



Trip characteristics available from the report, Alliance California Gateway South Building 3 Traffic Impact Analysis (Urban Crossroads, Inc., 2013) (Project TIA) were utilized in this analysis. Project operational (vehicular) impacts are dependent on both overall daily vehicle trip generation and the effect of the Project on peak hour traffic volumes and traffic operations. It should be noted that the Project's traffic study presents the total Project vehicle trips in terms of Passenger Car Equivalents (PCEs) in an effort to recognize and acknowledge the effects of heavy vehicles at the study area intersections. Notwithstanding, for purposes of the HRA, the PCE trips were not used. Rather, to more accurately estimate and model vehicular-source emissions, the actual number of vehicles, by vehicle classification (e.g., passenger cars (including light trucks), heavy trucks) were used in the analysis. The vehicle fleet mix, in terms of actual vehicles, as derived from the traffic study for the Project is comprised of approximately 79.57% passenger cars (1,603 passenger cars) and approximately 20.43% total trucks (412 trucks). The total traffic generation in vehicles is 2,015 per day.

In order to convert the axle based fleet mix to the vehicle classes utilized by EMFAC, the SCAQMD recommends[7] the following method: 4+ axles = HHDT, 3 axles = MHDT, 2 axles = LHDT1, all others LDA.

2.3 EXPOSURE QUANTIFICATION

The analysis herein has been conducted in accordance with the guidelines in the Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis. SCAQMD recommends using the Environmental Protection Agency's (U.S. EPA's) AERMOD model[8]. For purposes of this analysis, the model was used to calculate annual average particulate concentrations associated with site operations.

The model offers additional flexibility by allowing the user to assign an initial release height and vertical dispersion parameters for mobile sources representative of a roadway. For this HRA, the roadways were modeled as adjacent volume sources. According to the AERMOD user's guide, the initial horizontal standard deviation (σ_y) of individual volume sources should be estimated as the distance between adjacent volume sources divided by 2.15. In a similar manner, the AERMOD user guide specifies that the source initial vertical standard deviation (σ_z) for a surface-based source should be estimated as the height of the source divided by a factor of 2.15. The release height of 4 meters was assumed for the diesel trucks, consistent with the methodology used in the Diesel Particulate Matter Exposure Assessment Study for the Ports of Los Angeles and Long Beach prepared by CARB in April 2006, and the vertical (sigma z) dispersion parameter of 1.86 meters was utilized in the AERMOD model.

[7] CalEEMod™ *Appendix E Technical Source Documentation: Analysis of Warehouse Trip Generation Rates by SCAQMD*

[8] The American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee (AERMIC) was formed to introduce state-of-the-art modeling concepts into the EPA's air quality models. Through AERMIC, a modeling system, AERMOD, was introduced that incorporated air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain.

TABLE 2-2

DPM EMISSIONS FROM PROJECT TRUCKS

RESIDENTIAL EXPOSURE 70 YEAR AVERAGE

Truck Emission Rates (70 year average)						
Source	Trips Per Day	VMT [a] (miles/day)	Truck Emission Rate [b] (grams/mile)	Truck Emission Rate [b] (grams/idle-hour)	Daily Truck Emissions [c] (grams/day)	Modeled Emission Rates (g/second)
On-Site Travel/Loading/Unloading - North	103	32.88	0.0742	0.2259	8.26	9.555E-05
On-Site Travel/Loading/Unloading - South	103	31.49	0.0742	0.2259	8.15	9.436E-05
20 Percent inbound on Orange Show from the east	41	24.72	0.0476		1.18	1.362E-05
15 percent inbound from I-10 westbound	31	44.45	0.0476		2.12	2.448E-05
15 percent inbound from 10 eastbound	31	39.64	0.0476		1.89	2.183E-05
10 percent inbound from I-215 southbound	21	24.36	0.0476		1.16	1.342E-05
40 percent inbound from I-215 northbound	82	96.13	0.0476		4.58	5.295E-05
35 percent outbound to the 10 eastbound	72	88.59	0.0476		4.22	4.880E-05
10 percent outbound to the 10 westbound	21	24.13	0.0476		1.15	1.330E-05
10 percent outbound to i-215 northbound	21	23.69	0.0476		1.13	1.305E-05
45 percent outbound to I-215 northbound	93	114.63	0.0476		5.46	6.314E-05
25 percent outbound to driveway 1	52	5.55	0.0476		0.26	3.055E-06
50 percent outbound to driveway 2	103	33.30	0.0476		1.58	1.834E-05
25 percent outbound to driveway 3	52	27.23	0.0476		1.30	1.500E-05
25 percent inbound to driveway 1	52	5.55	0.0476		0.26	3.055E-06
40 percent inbound to driveway 2	82	26.03	0.0476		1.24	1.434E-05
15 percent inbound to driveway 3	31	15.97	0.0476		0.76	8.797E-06
10 percent inbound to driveway 2	21	4.67	0.0476		0.22	2.574E-06
10 percent inbound to driveway 3	21	1.82	0.0476		0.09	1.004E-06

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

[b] Emission rates determined using EMFAC 2011. Idle emission rates are expressed in grams per idle hour rather than grams per mile.

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

TABLE 2-3

DPM EMISSIONS FROM PROJECT TRUCKS

WORKER EXPOSURE 40 YEAR AVERAGE

Truck Emission Rates (40 year average)						
Source	Trips Per Day	VMT [a] (miles/day)	Truck Emission Rate [b] (grams/mile)	Truck Emission Rate [b] (grams/idle-hour)	Daily Truck Emissions [c] (grams/day)	Modeled Emission Rates (g/second)
On-Site Travel/Loading/Unloading - North	103	32.88	0.0800	0.2300	8.55	9.896E-05
On-Site Travel/Loading/Unloading - South	103	31.49	0.0800	0.2300	8.44	9.768E-05
20 Percent inbound on Orange Show from the east	41	24.72	0.0492		1.22	1.409E-05
15 percent inbound from I-10 westbound	31	44.45	0.0492		2.19	2.532E-05
15 percent inbound from 10 eastbound	31	39.64	0.0492		1.95	2.258E-05
10 percent inbound from I-215 southbound	21	24.36	0.0492		1.20	1.388E-05
40 percent inbound from I-215 northbound	82	96.13	0.0492		4.73	5.477E-05
35 percent outbound to the 10 eastbound	72	88.59	0.0492		4.36	5.047E-05
10 percent outbound to the 10 westbound	21	24.13	0.0492		1.19	1.375E-05
10 percent outbound to i-215 northbound	21	23.69	0.0492		1.17	1.350E-05
45 percent outbound to I-215 northbound	93	114.63	0.0492		5.64	6.530E-05
25 percent outbound to driveway 1	52	5.55	0.0492		0.27	3.159E-06
50 percent outbound to driveway 2	103	33.30	0.0492		1.64	1.897E-05
25 percent outbound to driveway 3	52	27.23	0.0492		1.34	1.551E-05
25 percent inbound to driveway 1	52	5.55	0.0492		0.27	3.159E-06
40 percent inbound to driveway 2	82	26.03	0.0492		1.28	1.483E-05
15 percent inbound to driveway 3	31	15.97	0.0492		0.79	9.098E-06
10 percent inbound to driveway 2	21	4.67	0.0492		0.23	2.662E-06
10 percent inbound to driveway 3	21	1.82	0.0492		0.09	1.038E-06

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

[b] Emission rates determined using EMFAC 2011. Idle emission rates are expressed in grams per idle hour rather than grams per mile.

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

TABLE 2-4

DPM EMISSIONS FROM PROJECT TRUCKS

SCHOOL CHILD EXPOSURE 9 YEAR AVERAGE

Truck Emission Rates (9 year average)						
Source	Trips Per Day	VMT [a] (miles/day)	Truck Emission Rate [b] (grams/mile)	Truck Emission Rate [b] (grams/idle-hour)	Daily Truck Emissions [c] (grams/day)	Modeled Emission Rates (g/second)
On-Site Travel/Loading/Unloading - North	103	32.88	0.1237	0.2624	10.82	1.253E-04
On-Site Travel/Loading/Unloading - South	103	31.49	0.1237	0.2624	10.65	1.233E-04
20 Percent inbound on Orange Show from the east	41	24.72	0.0613		1.52	1.755E-05
15 percent inbound from I-10 westbound	31	44.45	0.0613		2.73	3.154E-05
15 percent inbound from 10 eastbound	31	39.64	0.0613		2.43	2.813E-05
10 percent inbound from I-215 southbound	21	24.36	0.0613		1.49	1.729E-05
40 percent inbound from I-215 northbound	82	96.13	0.0613		5.89	6.822E-05
35 percent outbound to the 10 eastbound	72	88.59	0.0613		5.43	6.287E-05
10 percent outbound to the 10 westbound	21	24.13	0.0613		1.48	1.713E-05
10 percent outbound to i-215 northbound	21	23.69	0.0613		1.45	1.681E-05
45 percent outbound to I-215 northbound	93	114.63	0.0613		7.03	8.134E-05
25 percent outbound to driveway 1	52	5.55	0.0613		0.34	3.935E-06
50 percent outbound to driveway 2	103	33.30	0.0613		2.04	2.363E-05
25 percent outbound to driveway 3	52	27.23	0.0613		1.67	1.932E-05
25 percent inbound to driveway 1	52	5.55	0.0613		0.34	3.935E-06
40 percent inbound to driveway 2	82	26.03	0.0613		1.60	1.847E-05
15 percent inbound to driveway 3	31	15.97	0.0613		0.98	1.133E-05
10 percent inbound to driveway 2	21	4.67	0.0613		0.29	3.316E-06
10 percent inbound to driveway 3	21	1.82	0.0613		0.11	1.293E-06

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

[b] Emission rates determined using EMFAC 2011. Idle emission rates are expressed in grams per idle hour rather than grams per mile.

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

SCAQMD required model parameters are presented in Table 2-5. The model requires additional input parameters including emission data and local meteorology. Meteorological data from the SCAQMD's San Bernardino monitoring station (SRA 34) located approximately 1.96 miles north of the Project site was used to represent local weather conditions and prevailing winds.

TABLE 2-5

AERMOD MODEL PARAMETERS

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

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

Modeled sensitive receptors were placed at discrete residential and non-residential locations for the applicable residential and non-residential scenarios.

2.4 CARCINOGENIC CHEMICAL RISK

The SCAQMD CEQA Air Quality Handbook (1993) states that emissions of toxic air contaminants (TACs) are considered significant if a HRA shows an increased risk of greater than ten in one million. Based on guidance from the SCAQMD in the document Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis (2003), for purposes of this analysis, ten (10) in one million is used as the cancer risk threshold for the proposed Project.

Health risks associated with exposure to carcinogenic compounds are defined in terms of the probability of developing cancer as a result of exposure to a chemical at a given concentration. The cancer risk probability is determined by multiplying the chemical's annual concentration by its unit risk factor (URF). The URF is a measure of carcinogenic potential of a chemical when a dose is received

through the inhalation pathway. It represents an upper-bound estimate of the probability of contracting cancer as a result of continuous exposure to an ambient concentration of one microgram per cubic meter ($\mu g/m^3$) over a 70 year lifetime. The URF utilized in this analysis was obtained from the California Environmental Protection Agency, Office of Environmental Health Hazard (OEHHA).

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

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

Where:

CDI = chronic daily intake (mg/kg/day)
C_{air} = concentration of contaminant in air (mg/m^3)
EF = exposure frequency (days/year)
ED = exposure duration (years)
IR = inhalation rate (m^3/day)
BW = body weight (kg)
AT = averaging time (days)

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

Discrete variants for body weight and inhalation were obtained from relevant distribution profiles presented in the OEHHA guidance document entitled Air Toxic Hot Spots Program Risk Assessment Guidelines, Part IV: Technical Support Document for Exposure Assessment and Stochastic Analysis (2000). Table 2-6 summarizes the OEHHA-Recommended Exposure Parameters for Residents, Offsite Worker, and School Children. Appendix "B" includes the detailed emissions and risk calculation outputs.

The risk estimates were thus calculated as follows:

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

Where:

CR_{DPM} = cancer risk from DPM exposure
CDI = chronic daily intake (mg/kg/day)
CPF = cancer potency factor
URF = unit risk factor

TABLE 2-6

OEHHA RECOMMENDED EXPOSURE PARAMETERS

Exposure Parameter	Units	Residential	Worker	School Child [a]
Exposure Frequency	days/year	365	245	180
Exposure Duration	years	70	40	9
Inhalation Rate	m^3/day	21.14	10.43	40.67
Body Weight	kilograms	70	70	18
Averaging Time	days	25550	25550	25550
Exposure Time	hours/day	24	12	10

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

2.5 POTENTIAL PROJECT-RELATED DPM-SOURCE CANCER RISKS[9]

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

For the Residential Exposure Scenario, results indicate that particulate emissions generated from the Project will not have a significant health risk to residential land uses in the project area.

For the Worker Exposure Scenario, results indicate that particulate emissions generated from the Project will not have a significant health risk to workers in the project area.

For the School Child Exposure Scenario, results indicate that particulate emissions generated from the Project will not have a significant health risk to school children in the project area.

2.6 NON-CARCINOGENIC EXPOSURES

An evaluation of the potential noncarcinogenic effects of chronic exposures was also conducted. Adverse health effects are evaluated by comparing a compound's annual concentration with its toxicity

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

factor or Reference Exposure Level (REL). The REL for diesel particulates was obtained from OEHHA for this analysis. The chronic reference exposure level (REL) for DPM was established by OEHHA as 5 $\mu g/m^3$ (OEHHA Toxicity Criteria Database, http://www.oehha.org/risk/chemicaldb/index.asp).

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

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

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

Where:

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

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

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

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

2.7 CUMULATIVE IMPACTS

The State CEQA Guidelines suggest, from an air quality perspective, that a project would normally be judged to produce a significant or potentially significant effect on the environment if the project were to result in a cumulatively considerable net increase in any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standards.

The SCAQMD has conducted an in-depth analysis of the toxic air contaminants and their resulting health risks for all of Southern California. This study, the *Multiple Air Toxics Exposure Study in the South Coast Air Basin, MATES III,"* shows that the region around the Project site has an ambient cancer risk of 1,318 in one million (SCAQMD 2008, MATES III Carcinogenic Interactive Map).

MATES-III is the most comprehensive dataset documenting the ambient air toxic levels and health risks associated with the South Coast Air Basin emissions. Therefore, MATES-III study represents the baseline health risk for a cumulative analysis. MATES-III estimates the average excess cancer risk level from exposure to TACs is approximately 1,200 in one million basin-wide. These model estimates were based on monitoring data collected at ten fixed sites within the South Coast Air Basin. None of the fixed monitoring sites are within the local area of the Project site. However, MATES-III has extrapolated the excess cancer risk levels throughout the basin by modeling the specific grids. MATES-III modeling predicted an excess cancer risk of 1,318 in one million for the Project area. DPM is included in this cancer risk along with all other TAC sources. DPM accounts for 83.6% of the total risk shown in MATES-III. Cumulative Project generated TACs are limited to DPM.

The total risk derived by the MATES-III study was added to the Project source risks to determine the cumulative risks in the project area. The existing background is identified in the MATES-III Study is a risk of 1,318 in one million of contracting cancer in the project area from all sources of TACs within the South Coast Air Basin.

The cumulative with Project cancer risks are shown on Table 2-7 for the Project. A summary of cumulative impacts for Residential, Worker, and School Child Exposure scenarios is as follows:

Residential Exposure Scenario:

The highest cumulative with Project cancer risk is 1,323.88 in one million. The Project's maximum incremental contribution to the cumulative health risk in the Project area is 5.88 in one million which is not above the 10 in one million threshold set by SCAQMD, and is therefore less-than-significant. Accordingly, pursuant to SCAQMD cumulative impact criteria, the Project's Residential Exposure impacts would not be cumulatively considerable.

Worker Exposure Scenario:

The highest cumulative with Project cancer risk after is 1,319.15 in one million. The Project's maximum incremental contribution to the cumulative health risk in the Project area is 1.15 in one million which is not above the 10 in one million threshold set by SCAQMD, and is therefore less-than-significant. Accordingly, pursuant to SCAQMD cumulative impact criteria, the Project's Worker Exposure impacts would not be cumulatively considerable.

School Child Exposure Scenario:

The highest cumulative with Project cancer risk after is 1,318.08 in one million. The Project's maximum incremental contribution to the cumulative health risk in the Project area is 0.08 in one million which is not above the 10 in one million threshold set by SCAQMD, and is therefore less-than-significant. Accordingly, pursuant to SCAQMD cumulative impact criteria, the Project's School Child Exposure impacts would not be cumulatively considerable.

TABLE 2-7

CUMULATIVE CANCER RISK[10]

	Cancer Risk as Maximum Sensitive Receptor (risk in one million)		
	Background	Project Site	Total Cumulative Risk
Maximum Impact to All Receptors Without Project	1,318		1,318
Maximum Impact to Nearest Residential With Project	1,318	5.88	1,323.88
Maximum Impact to Nearest Worker With Project	1,318	1.15	1,319.15
Maximum Impact to Nearest School With Project	1,318	0.08	1,318.08
Source: **MATES III Carcinogenic Risk Interactive Map (**http://www2.aqmd.gov/webappl/matesiii/) (SCAQMD 2008).			

[10] Although cumulative impacts typically represent a General Plan Buildout Scenario, there is no such data available for what General Plan Buildout DPM emissions impacts would be. The background risk, however, would likely overstate, rather than understate future DPM impacts and is assumed to be inclusive of future growth. It should be noted that due to improved DPM emissions control technologies and increasingly stringent DPM emissions regulations, the cancer risk incidence in the seven (7) years between the Mates II and Mates III studies declined by approximately 15% even as population and business growth occurred throughout the region. Similar future declines in area-wide DPM source emissions are anticipated pursuant to enactment of further emissions regulations, including but not limited to anticipated greenhouse gas (GHG) reduction and control measures to be implemented by the state (see also: emissions regulatory measures discussed within *Alliance California Gateway South Building 3 Air Quality Impact Analysis (*Urban Crossroads) 2013*; and Alliance California Gateway South Building 3 Greenhouse Gas Impact Analysis (*Urban Crossroads) 2013*.*

APPENDIX A

AERMOD Model Input/Output

AERMOD Model Input/Output

Residential

*** AERMOD - VERSION 12345 ***   *** U:\UcJobs_08600-09000_08700\08766\AERMOD\08766_Orange Show\08766_O ***   09/25/13
***
***   17:38:31

PAGE   1
**MODELOPTs: NonDFAULT CONC   FLAT
FLGPOL   FASTALL

***   MODEL SETUP OPTIONS SUMMARY   ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

-- DEPOSITION LOGIC --

**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses URBAN Dispersion Algorithm for the SBL for 2518 Source(s),
for Total of   1 Urban Area(s):
Urban Population =   2015355.0 ; Urban Roughness Length = 1.000 m

**Model Allows User-Specified Options:

1. Stack-tip Downwash.
2. Model Assumes Receptors on FLAT Terrain.
3. Use Calms Processing Routine.
4. Use Missing Data Processing Routine.
5. No Exponential Decay.
6. Urban Roughness Length of 1.0 Meter Used.

**Other Options Specified:

FASTALL - Use effective sigma-y to optimize meander for POINT and VOLUME sources, and hybrid approach to optimize AREA sources (formerly TOXICS option)

**Model Accepts FLAGPOLE Receptor Heights.

**Model Calculates ANNUAL Averages Only

**This Run Includes: 2518 Source(s);   1 Source Group(s); and 22 Receptor(s)

**The Model Assumes A Pollutant Type of: DPM

**Model Set To Continue RUNning After the Setup Testing.

**Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 305.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC
; Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 4.6 MB of RAM.

**Detailed Error/Message File: RES.err
**File for Summary of Results: RES.sum

```
 *** AERMOD - VERSION  12345 ***   *** U:\UcJobs\_08600-
09000\_08700\08766\AERMOD\08766_Orange Show\08766_O ***        09/25/13
                                                   ***
***        17:38:31

PAGE   2
 **MODELOPTs:  NonDFAULT CONC                                    FLAT
FLGPOL                        FASTALL


                                            *** METEOROLOGICAL DAYS
SELECTED FOR PROCESSING ***
                                                               (1=YES;
0=NO)

            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1

                       METEOROLOGICAL DATA PROCESSED BETWEEN START DATE:
2005   1  1  1
                                                          AND END DATE:
2005  12 31 24

                NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO
DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.



                                  *** UPPER BOUND OF FIRST THROUGH FIFTH
WIND SPEED CATEGORIES ***
                                                           (METERS/SEC)

                                                 1.54,   3.09,   5.14,
8.23,  10.80,
```

**MODELOPTs: NonDFAULT CONC FLAT FLGPOL FASTALL

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: snbo6.sfc
Met Version: 12345
Profile file: snbo6.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 3190 Upper air station no.: 3190
Name: UNKNOWN Name: UNKNOWN
Year: 2005 Year: 2005

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
05	01	01	1	01	-0.2	0.017	-9.000	-9.000	-999.	5.	1.8	0.32	1.00	1.00	0.28	81.	9.1	279.2	5.5
05	01	01	1	02	-0.2	0.017	-9.000	-9.000	-999.	5.	1.8	0.32	1.00	1.00	0.28	93.	9.1	279.9	5.5
05	01	01	1	03	-0.2	0.017	-9.000	-9.000	-999.	5.	1.8	0.32	1.00	1.00	0.28	94.	9.1	278.8	5.5
05	01	01	1	04	-0.2	0.017	-9.000	-9.000	-999.	5.	1.8	0.32	1.00	1.00	0.28	43.	9.1	278.8	5.5
05	01	01	1	05	-0.5	0.024	-9.000	-9.000	-999.	8.	2.6	0.32	1.00	1.00	0.40	20.	9.1	278.8	5.5
05	01	01	1	06	-0.5	0.024	-9.000	-9.000	-999.	8.	2.6	0.32	1.00	1.00	0.40	69.	9.1	278.8	5.5
05	01	01	1	07	-0.5	0.024	-9.000	-9.000	-999.	8.	2.6	0.32	1.00	1.00	0.40	46.	9.1	278.8	5.5
05	01	01	1	08	-0.4	0.024	-9.000	-9.000	-999.	8.	2.8	0.32	1.00	0.52	0.40	157.	9.1	279.2	5.5
05	01	01	1	09	30.3	0.090	0.402	0.005	74.	62.	-2.1	0.32	1.00	0.31	0.40	22.	9.1	280.4	5.5
05	01	01	1	10	79.7	0.169	1.215	0.005	784.	159.	-5.2	0.32	1.00	0.24	0.90	17.	9.1	283.1	5.5
05	01	01	1	11	120.6	0.109	1.529	0.007	1033.	83.	-1.0	0.32	1.00	0.21	0.40	113.	9.1	285.4	5.5
05	01	01	1	12	133.4	0.227	1.674	0.009	1228.	248.	-7.6	0.32	1.00	0.20	1.30	193.	9.1	284.2	5.5

```
 05 01 01   1 13   81.5  0.215  1.428  0.009 1247.  229.    -10.6  0.32
1.00   0.20    1.30  190.    9.1  285.4    5.5
 05 01 01   1 14   81.2  0.103  1.433  0.009 1265.   82.     -1.2  0.32
1.00   0.22    0.40  354.    9.1  285.4    5.5
 05 01 01   1 15   36.7  0.093  1.102  0.009 1272.   65.     -1.9  0.32
1.00   0.25    0.40   14.    9.1  284.9    5.5
 05 01 01   1 16    0.8  0.059  0.314  0.009 1272.   33.    -21.6  0.32
1.00   0.34    0.40  359.    9.1  284.2    5.5
 05 01 01   1 17   -0.2  0.017 -9.000 -9.000 -999.    6.      2.1  0.32
1.00   0.63    0.28   45.    9.1  283.8    5.5
 05 01 01   1 18   -0.5  0.024 -9.000 -9.000 -999.    8.      2.6  0.32
1.00   1.00    0.40  261.    9.1  283.1    5.5
 05 01 01   1 19   -4.8  0.077 -9.000 -9.000 -999.   49.      8.4  0.32
1.00   1.00    1.30  224.    9.1  282.5    5.5
 05 01 01   1 20   -2.0  0.054 -9.000 -9.000 -999.   28.      6.8  0.32
1.00   1.00    0.90  207.    9.1  282.5    5.5
 05 01 01   1 21   -2.0  0.054 -9.000 -9.000 -999.   28.      6.7  0.32
1.00   1.00    0.90   88.    9.1  282.0    5.5
 05 01 01   1 22   -0.3  0.024 -9.000 -9.000 -999.    8.      3.5  0.32
1.00   1.00    0.40   97.    9.1  280.9    5.5
 05 01 01   1 23   -0.3  0.024 -9.000 -9.000 -999.    8.      3.5  0.32
1.00   1.00    0.40   52.    9.1  279.9    5.5
 05 01 01   1 24   -0.3  0.024 -9.000 -9.000 -999.    8.      3.5  0.32
1.00   1.00    0.40   73.    9.1  279.2    5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 05 01 01 01    5.5 0 -999.  -99.00   279.3   99.0  -99.00  -99.00
 05 01 01 01    9.1 1   81.    0.20  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
```

**MODELOPTs: NonDFAULT CONC FLAT FLGPOL FASTALL

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF DPM IN MICROGRAMS/M**3 **

NETWORK GROUP ID		AVERAGE CONC			RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)				OF TYPE	GRID-ID
ALL	1ST HIGHEST VALUE IS	0.01853	AT (	474619.04,	3770853.73,	305.00,	305.00,	1.50)	DC	
	2ND HIGHEST VALUE IS	0.01760	AT (	474522.50,	3770855.50,	305.00,	305.00,	1.50)	DC	
	3RD HIGHEST VALUE IS	0.01708	AT (	474846.53,	3770860.07,	305.00,	305.00,	1.50)	DC	
	4TH HIGHEST VALUE IS	0.01632	AT (	474567.91,	3770858.58,	305.00,	305.00,	1.50)	DC	
	5TH HIGHEST VALUE IS	0.01338	AT (	474975.17,	3770852.75,	305.00,	305.00,	1.50)	DC	
	6TH HIGHEST VALUE IS	0.01085	AT (	475069.22,	3770853.26,	305.00,	305.00,	1.50)	DC	
	7TH HIGHEST VALUE IS	0.01083	AT (	475047.14,	3770857.53,	305.00,	305.00,	1.50)	DC	
	8TH HIGHEST VALUE IS	0.01072	AT (	474337.36,	3770867.84,	305.00,	305.00,	1.50)	DC	
	9TH HIGHEST VALUE IS	0.01030	AT (	475095.07,	3770851.01,	305.00,	305.00,	1.50)	DC	
	10TH HIGHEST VALUE IS	0.00928	AT (	474338.68,	3770757.63,	305.00,	305.00,	1.50)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

 **MODELOPTs: NonDFAULT CONC   FLAT FLGPOL   FASTALL

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of   0 Fatal Error Message(s)
 A Total of   1 Warning Message(s)
 A Total of   40 Informational Message(s)

 A Total of   8760 Hours Were Processed

 A Total of   0 Calm Hours Identified

 A Total of   40 Missing Hours Identified (0.46 Percent)

    ******** FATAL ERROR MESSAGES ********
               *** NONE ***

    ********   WARNING MESSAGES   ********
 ME W530   5635 MEOPEN:CAUTION! Met Station ID Mismatch with SURFFILE for SURFDATA

AERMOD Model Input/Output

Workers

```
 *** AERMOD - VERSION  12345 ***   *** U:\UcJobs\_08600-
09000\_08700\08766\AERMOD\08766_Orange Show\08766_O ***       09/25/13
                                                   ***
***        17:28:41

PAGE   1
 **MODELOPTs:  NonDFAULT CONC                                    FLAT
FLGPOL                        FASTALL


                                            ***     MODEL SETUP OPTIONS
SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for  2518 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   2015355.0 ;  Urban Roughness Length =  1.000 m

 **Model Allows User-Specified Options:
         1. Stack-tip Downwash.
         2. Model Assumes Receptors on FLAT Terrain.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.
         6. Urban Roughness Length of 1.0 Meter Used.

 **Other Options Specified:
         FASTALL  - Use effective sigma-y to optimize meander for
                    POINT and VOLUME sources, and hybrid approach
                    to optimize AREA sources (formerly TOXICS option)

 **Model Accepts FLAGPOLE Receptor Heights.

 **Model Calculates ANNUAL Averages Only

 **This Run Includes:   2518 Source(s);       1 Source Group(s); and
20 Receptor(s)

 **The Model Assumes A Pollutant Type of:  DPM

 **Model Set To Continue RUNning After the Setup Testing.

 **Output Options Selected:
          Model Outputs Tables of ANNUAL Averages by Receptor
```

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 305.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC
; Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 4.6 MB of RAM.

**Detailed Error/Message File: Worker.err
**File for Summary of Results: Worker.sum

**MODELOPTs: NonDFAULT CONC   FLAT
FLGPOL   FASTALL

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2005   1 1 1
AND END DATE: 2005 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54,   3.09,   5.14,   8.23, 10.80,

**MODELOPTs: NonDFAULT CONC FLAT FLGPOL FASTALL

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: snbo6.sfc
Met Version: 12345
Profile file: snbo6.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 3190 Upper air station no.: 3190
Name: UNKNOWN Name: UNKNOWN
Year: 2005 Year: 2005

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
05	01	01	1	01	-0.2	0.017	-9.000	-9.000	-999.	5.	1.8	0.32	1.00	1.00	0.28	81.	9.1	279.2	5.5
05	01	01	1	02	-0.2	0.017	-9.000	-9.000	-999.	5.	1.8	0.32	1.00	1.00	0.28	93.	9.1	279.9	5.5
05	01	01	1	03	-0.2	0.017	-9.000	-9.000	-999.	5.	1.8	0.32	1.00	1.00	0.28	94.	9.1	278.8	5.5
05	01	01	1	04	-0.2	0.017	-9.000	-9.000	-999.	5.	1.8	0.32	1.00	1.00	0.28	43.	9.1	278.8	5.5
05	01	01	1	05	-0.5	0.024	-9.000	-9.000	-999.	8.	2.6	0.32	1.00	1.00	0.40	20.	9.1	278.8	5.5
05	01	01	1	06	-0.5	0.024	-9.000	-9.000	-999.	8.	2.6	0.32	1.00	1.00	0.40	69.	9.1	278.8	5.5
05	01	01	1	07	-0.5	0.024	-9.000	-9.000	-999.	8.	2.6	0.32	1.00	1.00	0.40	46.	9.1	278.8	5.5
05	01	01	1	08	-0.4	0.024	-9.000	-9.000	-999.	8.	2.8	0.32	1.00	0.52	0.40	157.	9.1	279.2	5.5
05	01	01	1	09	30.3	0.090	0.402	0.005	74.	62.	-2.1	0.32	1.00	0.31	0.40	22.	9.1	280.4	5.5
05	01	01	1	10	79.7	0.169	1.215	0.005	784.	159.	-5.2	0.32	1.00	0.24	0.90	17.	9.1	283.1	5.5
05	01	01	1	11	120.6	0.109	1.529	0.007	1033.	83.	-1.0	0.32	1.00	0.21	0.40	113.	9.1	285.4	5.5
05	01	01	1	12	133.4	0.227	1.674	0.009	1228.	248.	-7.6	0.32	1.00	0.20	1.30	193.	9.1	284.2	5.5

```
 05 01 01   1 13   81.5  0.215  1.428  0.009 1247.  229.    -10.6  0.32
1.00   0.20    1.30  190.    9.1  285.4    5.5
 05 01 01   1 14   81.2  0.103  1.433  0.009 1265.   82.     -1.2  0.32
1.00   0.22    0.40  354.    9.1  285.4    5.5
 05 01 01   1 15   36.7  0.093  1.102  0.009 1272.   65.     -1.9  0.32
1.00   0.25    0.40   14.    9.1  284.9    5.5
 05 01 01   1 16    0.8  0.059  0.314  0.009 1272.   33.    -21.6  0.32
1.00   0.34    0.40  359.    9.1  284.2    5.5
 05 01 01   1 17   -0.2  0.017 -9.000 -9.000 -999.    6.      2.1  0.32
1.00   0.63    0.28   45.    9.1  283.8    5.5
 05 01 01   1 18   -0.5  0.024 -9.000 -9.000 -999.    8.      2.6  0.32
1.00   1.00    0.40  261.    9.1  283.1    5.5
 05 01 01   1 19   -4.8  0.077 -9.000 -9.000 -999.   49.      8.4  0.32
1.00   1.00    1.30  224.    9.1  282.5    5.5
 05 01 01   1 20   -2.0  0.054 -9.000 -9.000 -999.   28.      6.8  0.32
1.00   1.00    0.90  207.    9.1  282.5    5.5
 05 01 01   1 21   -2.0  0.054 -9.000 -9.000 -999.   28.      6.7  0.32
1.00   1.00    0.90   88.    9.1  282.0    5.5
 05 01 01   1 22   -0.3  0.024 -9.000 -9.000 -999.    8.      3.5  0.32
1.00   1.00    0.40   97.    9.1  280.9    5.5
 05 01 01   1 23   -0.3  0.024 -9.000 -9.000 -999.    8.      3.5  0.32
1.00   1.00    0.40   52.    9.1  279.9    5.5
 05 01 01   1 24   -0.3  0.024 -9.000 -9.000 -999.    8.      3.5  0.32
1.00   1.00    0.40   73.    9.1  279.2    5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 05 01 01 01    5.5 0 -999.  -99.00   279.3   99.0  -99.00  -99.00
 05 01 01 01    9.1 1   81.    0.20  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
```

**MODELOPTs: NonDFAULT CONC FLAT FLGPOL FASTALL

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF DPM IN MICROGRAMS/M**3 **

NETWORK GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	1ST HIGHEST VALUE IS	0.01918	AT (474619.04, 3770853.73, 305.00, 305.00, 1.50)	DC
	2ND HIGHEST VALUE IS	0.01820	AT (474522.50, 3770855.50, 305.00, 305.00, 1.50)	DC
	3RD HIGHEST VALUE IS	0.01767	AT (474846.53, 3770860.07, 305.00, 305.00, 1.50)	DC
	4TH HIGHEST VALUE IS	0.01689	AT (474567.91, 3770858.58, 305.00, 305.00, 1.50)	DC
	5TH HIGHEST VALUE IS	0.01385	AT (474975.17, 3770852.75, 305.00, 305.00, 1.50)	DC
	6TH HIGHEST VALUE IS	0.01123	AT (475069.22, 3770853.26, 305.00, 305.00, 1.50)	DC
	7TH HIGHEST VALUE IS	0.01121	AT (475047.14, 3770857.53, 305.00, 305.00, 1.50)	DC
	8TH HIGHEST VALUE IS	0.01109	AT (474337.36, 3770867.84, 305.00, 305.00, 1.50)	DC
	9TH HIGHEST VALUE IS	0.01066	AT (475095.07, 3770851.01, 305.00, 305.00, 1.50)	DC
	10TH HIGHEST VALUE IS	0.00960	AT (474338.68, 3770757.63, 305.00, 305.00, 1.50)	DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

 **MODELOPTs: NonDFAULT CONC   FLAT FLGPOL   FASTALL

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of   0 Fatal Error Message(s)
 A Total of   1 Warning Message(s)
 A Total of   40 Informational Message(s)

 A Total of   8760 Hours Were Processed

 A Total of   0 Calm Hours Identified

 A Total of   40 Missing Hours Identified (0.46 Percent)

    ******** FATAL ERROR MESSAGES ********
               *** NONE ***

    ********   WARNING MESSAGES   ********
 ME W530   5633 MEOPEN:CAUTION! Met Station ID Mismatch with SURFFILE for   SURFDATA

AERMOD Model Input/Output

Schools

```
 *** AERMOD - VERSION  12345 ***   *** U:\UcJobs\_08600-
09000\_08700\08766\AERMOD\08766_Orange Show\08766_O ***       09/25/13
                                               ***
***          17:20:46

PAGE   1
 **MODELOPTs:  NonDFAULT CONC                                    FLAT
FLGPOL                         FASTALL


                                                   ***     MODEL SETUP OPTIONS
SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for  2518 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   2015355.0 ;  Urban Roughness Length =  1.000 m

 **Model Allows User-Specified Options:
         1. Stack-tip Downwash.
         2. Model Assumes Receptors on FLAT Terrain.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.
         6. Urban Roughness Length of 1.0 Meter Used.

 **Other Options Specified:
         FASTALL  - Use effective sigma-y to optimize meander for
                    POINT and VOLUME sources, and hybrid approach
                    to optimize AREA sources (formerly TOXICS option)

 **Model Accepts FLAGPOLE Receptor Heights.

 **Model Calculates ANNUAL Averages Only

 **This Run Includes:   2518 Source(s);       1 Source Group(s); and
4 Receptor(s)

 **The Model Assumes A Pollutant Type of:  DPM

 **Model Set To Continue RUNning After the Setup Testing.

 **Output Options Selected:
          Model Outputs Tables of ANNUAL Averages by Receptor
```

Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 305.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC
; Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 4.6 MB of RAM.

**Detailed Error/Message File: SchoolChild.err
**File for Summary of Results: SchoolChild.sum

**MODELOPTs: NonDFAULT CONC   FLAT
FLGPOL   FASTALL

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2005   1 1 1
AND END DATE: 2005 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54,   3.09,   5.14,   8.23, 10.80,

**MODELOPTs: NonDFAULT CONC FLAT FLGPOL FASTALL

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: snbo6.sfc
Met Version: 12345
Profile file: snbo6.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 3190 Upper air station no.: 3190
Name: UNKNOWN Name: UNKNOWN
Year: 2005 Year: 2005

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
05	01	01	1	01	-0.2	0.017	-9.000	-9.000	-999.	5.	1.8	0.32	1.00	1.00	0.28	81.	9.1	279.2	5.5
05	01	01	1	02	-0.2	0.017	-9.000	-9.000	-999.	5.	1.8	0.32	1.00	1.00	0.28	93.	9.1	279.9	5.5
05	01	01	1	03	-0.2	0.017	-9.000	-9.000	-999.	5.	1.8	0.32	1.00	1.00	0.28	94.	9.1	278.8	5.5
05	01	01	1	04	-0.2	0.017	-9.000	-9.000	-999.	5.	1.8	0.32	1.00	1.00	0.28	43.	9.1	278.8	5.5
05	01	01	1	05	-0.5	0.024	-9.000	-9.000	-999.	8.	2.6	0.32	1.00	1.00	0.40	20.	9.1	278.8	5.5
05	01	01	1	06	-0.5	0.024	-9.000	-9.000	-999.	8.	2.6	0.32	1.00	1.00	0.40	69.	9.1	278.8	5.5
05	01	01	1	07	-0.5	0.024	-9.000	-9.000	-999.	8.	2.6	0.32	1.00	1.00	0.40	46.	9.1	278.8	5.5
05	01	01	1	08	-0.4	0.024	-9.000	-9.000	-999.	8.	2.8	0.32	1.00	0.52	0.40	157.	9.1	279.2	5.5
05	01	01	1	09	30.3	0.090	0.402	0.005	74.	62.	-2.1	0.32	1.00	0.31	0.40	22.	9.1	280.4	5.5
05	01	01	1	10	79.7	0.169	1.215	0.005	784.	159.	-5.2	0.32	1.00	0.24	0.90	17.	9.1	283.1	5.5
05	01	01	1	11	120.6	0.109	1.529	0.007	1033.	83.	-1.0	0.32	1.00	0.21	0.40	113.	9.1	285.4	5.5
05	01	01	1	12	133.4	0.227	1.674	0.009	1228.	248.	-7.6	0.32	1.00	0.20	1.30	193.	9.1	284.2	5.5

```
 05 01 01   1 13   81.5  0.215  1.428  0.009 1247.  229.    -10.6  0.32
1.00   0.20    1.30  190.    9.1  285.4    5.5
 05 01 01   1 14   81.2  0.103  1.433  0.009 1265.   82.     -1.2  0.32
1.00   0.22    0.40  354.    9.1  285.4    5.5
 05 01 01   1 15   36.7  0.093  1.102  0.009 1272.   65.     -1.9  0.32
1.00   0.25    0.40   14.    9.1  284.9    5.5
 05 01 01   1 16    0.8  0.059  0.314  0.009 1272.   33.    -21.6  0.32
1.00   0.34    0.40  359.    9.1  284.2    5.5
 05 01 01   1 17   -0.2  0.017 -9.000 -9.000 -999.    6.      2.1  0.32
1.00   0.63    0.28   45.    9.1  283.8    5.5
 05 01 01   1 18   -0.5  0.024 -9.000 -9.000 -999.    8.      2.6  0.32
1.00   1.00    0.40  261.    9.1  283.1    5.5
 05 01 01   1 19   -4.8  0.077 -9.000 -9.000 -999.   49.      8.4  0.32
1.00   1.00    1.30  224.    9.1  282.5    5.5
 05 01 01   1 20   -2.0  0.054 -9.000 -9.000 -999.   28.      6.8  0.32
1.00   1.00    0.90  207.    9.1  282.5    5.5
 05 01 01   1 21   -2.0  0.054 -9.000 -9.000 -999.   28.      6.7  0.32
1.00   1.00    0.90   88.    9.1  282.0    5.5
 05 01 01   1 22   -0.3  0.024 -9.000 -9.000 -999.    8.      3.5  0.32
1.00   1.00    0.40   97.    9.1  280.9    5.5
 05 01 01   1 23   -0.3  0.024 -9.000 -9.000 -999.    8.      3.5  0.32
1.00   1.00    0.40   52.    9.1  279.9    5.5
 05 01 01   1 24   -0.3  0.024 -9.000 -9.000 -999.    8.      3.5  0.32
1.00   1.00    0.40   73.    9.1  279.2    5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 05 01 01 01    5.5 0 -999.  -99.00   279.3   99.0  -99.00  -99.00
 05 01 01 01    9.1 1   81.    0.20  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
```

**MODELOPTs: NonDFAULT CONC FLAT FLGPOL FASTALL

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF DPM IN MICROGRAMS/M**3 **

NETWORK GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	1ST HIGHEST VALUE IS	0.00055	AT (473762.63, 3772231.22, 305.00, 305.00, 1.50)	DC
	2ND HIGHEST VALUE IS	0.00052	AT (473610.91, 3772264.76, 305.00, 305.00, 1.50)	DC
	3RD HIGHEST VALUE IS	0.00050	AT (473664.66, 3772326.90, 305.00, 305.00, 1.50)	DC
	4TH HIGHEST VALUE IS	0.00048	AT (473653.22, 3772381.79, 305.00, 305.00, 1.50)	DC
	5TH HIGHEST VALUE IS	0.00000	AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	6TH HIGHEST VALUE IS	0.00000	AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	7TH HIGHEST VALUE IS	0.00000	AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	8TH HIGHEST VALUE IS	0.00000	AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	9TH HIGHEST VALUE IS	0.00000	AT (0.00, 0.00, 0.00, 0.00, 0.00)	
	10TH HIGHEST VALUE IS	0.00000	AT (0.00, 0.00, 0.00, 0.00, 0.00)	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

 **MODELOPTs: NonDFAULT CONC   FLAT FLGPOL   FASTALL

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of   0 Fatal Error Message(s)
 A Total of   1 Warning Message(s)
 A Total of   40 Informational Message(s)

 A Total of   8760 Hours Were Processed

 A Total of   0 Calm Hours Identified

 A Total of   40 Missing Hours Identified (0.46 Percent)

    ******** FATAL ERROR MESSAGES ********
               *** NONE ***

    ********   WARNING MESSAGES   ********
 ME W530   5617 MEOPEN:CAUTION! Met Station ID Mismatch with SURFFILE for   SURFDATA

APPENDIX B

Risk Calculations

MEIR

RESIDENTIAL EXPOSURE SCENARIO (70-YEAR)

Source	Maximum Concentration		Weight Fraction	Contaminant	Carcinogenic Risk			Noncarcinogenic Hazards		
					URF	CPF	RISK	REL	RfD	Index
	(ug/m3)	(mg/m3)			(ug/m3)	(mg/kg/day)		(ug/m3)	(mg/kg/day)	
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
Diesel	0.01853	1.9E-05	1.00E+00	Particulates	3.0E-04	1.1E+00	5.88	5.0E+00	1.4E-03	0.0037

Note: Exposure factors used to calculate contaminant intake

Exposure Frequency (days/year)	365
Exposure Duration (years)	70
Inhalation Rate (m3/day)*	21.14
Average Body Weight (kg)	70
Averaging Time $_{(cancer)}$ (days)	25550
Averaging Time $_{(non\text{-}cancer)}$ (days)	25550

*Inhalation Rate of 21.14 m3/day equates to the ARB breathing 302 liters per kilogram-day

E= 10^{X}, i.e. E-02 = 10^{-2}

U:\UcJobs_08600-09000_08700\08766\excel\[08766-HRA Risk Calculation (revised).xlsx]MEIR

QUANTIFICATION OF CARCINOGENIC RISKS AND NONCARCINOGENIC HAZARDS
WORKER EXPOSURE SCENARIO (40-YEAR)

Source	Maximum Concentration		Weight Fraction	Contaminant	Carcinogenic Risk			Noncarcinogenic Hazards		
	(ug/m3)	(mg/m3)			URF (ug/m3)	CPF (mg/kg/day)	RISK	REL (ug/m3)	RfD (mg/kg/day)	Index
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
Diesel	0.01918	1.9E-05	1.00E+00	Particulates	3.0E-04	1.1E+00	1.15	5.0E+00	1.4E-03	0.004

Note: Exposure factors used to calculate contaminant intake

Exposure Frequency (days/year)	245
Exposure Duration (years)	40
Inhalation Rate (m3/day)*	10.43
Average Body Weight (kg)	70
Averaging Time $_{(cancer)}$ (days)	25550
Averaging Time $_{(non\text{-}cancer)}$ (days)	14600

*Inhalation Rate of 10.43 m3/day equates to the ARB breathing 149 liters per kilogram-day

E= 10^{X}, i.e. E-02 = 10^{-2}

U:\UcJobs_08600-09000_08700\08766\excel\[08766-HRA Risk Calculation (revised).xlsx]Worker

QUANTIFICATION OF CARCINOGENIC RISKS AND NONCARCINOGENIC HAZARDS
SCHOOL CHILD EXPOSURE SCENARIO 9-YEAR EXPOSURE

Source	Maximum Concentration		Weight Fraction	Contaminant	Carcinogenic Risk			Noncarcinogenic Hazards		
	(ug/m3)	(mg/m3)			URF (ug/m3)	CPF (mg/kg/day)	RISK	REL (ug/m3)	RfD (mg/kg/day)	Index
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
Diesel	0.00055	5.5E-07	1.00E+00	Particulates	3.0E-04	1.1E+00	0.08	5.0E+00	1.4E-03	0.0001

Note: Exposure factors used to calculate contaminant intake

Exposure Frequency (days/year)	180
Exposure Duration (years)	9
Inhalation Rate (m3/day)*	40.67
Average Body Weight (kg)	18
Averaging Time $_{(cancer)}$ (days)	25550
Averaging Time$_{(noncancer)}$ (days)	3285

*Inhalation Rate of 40.67 m3/day equates to the ARB breathing 581 liters per kilogram-day

E= 10^{X}, i.e. E-02 = 10^{-2}

U:\UcJobs_08600-09000_08700\08766\excel\[08766-HRA Risk Calculation (revised).xlsx]School Child

AVERAGE EMISSION FACTOR
SCAQMD 2015-2084

Speed	LHD1	MHD	HHD
0	0.7972	0.10256	0.11195
5	0.05963	0.0519	0.08667
25	0.02927	0.03185	0.05866

Speed	Weighted Average Emissions
0	**0.22587**
5	**0.07419**
25	**0.04759**

Year	Speed	LHD1	MHD	HHD
2015	0 mph	0.833	0.33731	0.268041304
	5 mph	0.10456	0.33544	0.287271325
	25 mph	0.05103	0.10366	0.101431042
2016	0 mph	0.827	0.2769	0.147376333
	5 mph	0.10003	0.24432	0.157361366
	25 mph	0.04901	0.08605	0.074350813
2017	0 mph	0.821	0.23492	0.125406403
	5 mph	0.09554	0.18951	0.125014181
	25 mph	0.04698	0.07246	0.066067444
2018	0 mph	0.816	0.20515	0.122676517
	5 mph	0.09087	0.15078	0.118566915
	25 mph	0.04482	0.06203	0.065362932
2019	0 mph	0.811	0.17766	0.120390429
	5 mph	0.08725	0.11623	0.112288546
	25 mph	0.04278	0.05281	0.064381352
2020	0 mph	0.808	0.13307	0.116801038
	5 mph	0.08328	0.06054	0.098578644
	25 mph	0.04091	0.03907	0.062610457
2021	0 mph	0.805	0.09759	0.113728567
	5 mph	0.0796	0.04186	0.089326311
	25 mph	0.03928	0.02913	0.061320013
2022	0 mph	0.803	0.09557	0.111612805
	5 mph	0.07657	0.04107	0.088107247
	25 mph	0.03779	0.02868	0.060683822
2023	0 mph	0.8	0.0928	0.110180944
	5 mph	0.07335	0.03936	0.086858627
	25 mph	0.03621	0.02776	0.060202161
2024	0 mph	0.797	0.09244	0.109848495
	5 mph	0.07002	0.03954	0.08666149
	25 mph	0.03481	0.02795	0.060433249
2025	0 mph	0.795	0.0921	0.109580397
	5 mph	0.06734	0.03962	0.086795402
	25 mph	0.03345	0.02807	0.06068884
2026	0 mph	0.794	0.0918	0.109344346
	5 mph	0.06515	0.03966	0.081743552
	25 mph	0.03234	0.02815	0.057084057
2027	0 mph	0.794	0.09155	0.109139762
	5 mph	0.06309	0.03967	0.081679008
	25 mph	0.03131	0.02821	0.057182737
2028	0 mph	0.793	0.09134	0.108951941
	5 mph	0.06118	0.03968	0.08066173
	25 mph	0.03036	0.02826	0.056576929
2029	0 mph	0.793	0.09115	0.108791107
	5 mph	0.05942	0.03966	0.080554515
	25 mph	0.02949	0.02828	0.056640731

2030	0 mph	0.792	0.09098	0.108629001
	5 mph	0.05779	0.03965	0.080469681
	25 mph	0.02869	0.0283	0.056722272
2031	0 mph	0.792	0.09081	0.108448384
	5 mph	0.05747	0.03964	0.080358175
	25 mph	0.02818	0.02833	0.056786826
2032	0 mph	0.793	0.09071	0.10834289
	5 mph	0.05668	0.03963	0.080298107
	25 mph	0.02777	0.02834	0.056880823
2033	0 mph	0.793	0.09063	0.108243598
	5 mph	0.05598	0.03961	0.080212735
	25 mph	0.02742	0.02835	0.056967456
2034	0 mph	0.794	0.09055	0.108151436
	5 mph	0.05517	0.03958	0.080127532
	25 mph	0.02702	0.02835	0.057051814
2035	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2036	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2037	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2038	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2039	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2040	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2041	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2042	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2043	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2044	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2045	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2046	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2047	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2048	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2049	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2050	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2051	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2052	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2053	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2054	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744

2055	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2056	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2057	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2058	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2059	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2060	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2061	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2062	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2063	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2064	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2065	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2066	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2067	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2068	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2069	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2070	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2071	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2072	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2073	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2074	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2075	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2076	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2077	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2078	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2079	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2080	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2081	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2082	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2083	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2084	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744

AVERAGE EMISSION FACTOR
SCAQMD 2015-2054

Speed	LHD2	MHD	HHD
0	0.79885	0.11162	0.11487
5	0.06364	0.06116	0.09161
25	0.03128	0.03448	0.05981

Speed	Weighted Average Emissions
0	**0.22997**
5	**0.07996**
25	**0.04922**

Year	Speed	LHD2	MHD	HHD
2015	0 mph	0.833	0.33731	0.268041304
	5 mph	0.10456	0.33544	0.287271325
	25 mph	0.05103	0.10366	0.101431042
2016	0 mph	0.827	0.2769	0.147376333
	5 mph	0.10003	0.24432	0.157361366
	25 mph	0.04901	0.08605	0.074350813
2017	0 mph	0.821	0.23492	0.125406403
	5 mph	0.09554	0.18951	0.125014181
	25 mph	0.04698	0.07246	0.066067444
2018	0 mph	0.816	0.20515	0.122676517
	5 mph	0.09087	0.15078	0.118566915
	25 mph	0.04482	0.06203	0.065362932
2019	0 mph	0.811	0.17766	0.120390429
	5 mph	0.08725	0.11623	0.112288546
	25 mph	0.04278	0.05281	0.064381352
2020	0 mph	0.808	0.13307	0.116801038
	5 mph	0.08328	0.06054	0.098578644
	25 mph	0.04091	0.03907	0.062610457
2021	0 mph	0.805	0.09759	0.113728567
	5 mph	0.0796	0.04186	0.089326311
	25 mph	0.03928	0.02913	0.061320013
2022	0 mph	0.803	0.09557	0.111612805
	5 mph	0.07657	0.04107	0.088107247
	25 mph	0.03779	0.02868	0.060683822
2023	0 mph	0.8	0.0928	0.110180944
	5 mph	0.07335	0.03936	0.086858627
	25 mph	0.03621	0.02776	0.060202161
2024	0 mph	0.797	0.09244	0.109848495
	5 mph	0.07002	0.03954	0.08666149
	25 mph	0.03481	0.02795	0.060433249
2025	0 mph	0.795	0.0921	0.109580397
	5 mph	0.06734	0.03962	0.086795402
	25 mph	0.03345	0.02807	0.06068884
2026	0 mph	0.794	0.0918	0.109344346
	5 mph	0.06515	0.03966	0.081743552
	25 mph	0.03234	0.02815	0.057084057
2027	0 mph	0.794	0.09155	0.109139762
	5 mph	0.06309	0.03967	0.081679008
	25 mph	0.03131	0.02821	0.057182737
2028	0 mph	0.793	0.09134	0.108951941
	5 mph	0.06118	0.03968	0.08066173
	25 mph	0.03036	0.02826	0.056576929
2029	0 mph	0.793	0.09115	0.108791107
	5 mph	0.05942	0.03966	0.080554515
	25 mph	0.02949	0.02828	0.056640731
2030	0 mph	0.792	0.09098	0.108629001
	5 mph	0.05779	0.03965	0.080469681
	25 mph	0.02869	0.0283	0.056722272
2031	0 mph	0.792	0.09081	0.108448384
	5 mph	0.05747	0.03964	0.080358175
	25 mph	0.02818	0.02833	0.056786826
2032	0 mph	0.793	0.09071	0.10834289
	5 mph	0.05668	0.03963	0.080298107
	25 mph	0.02777	0.02834	0.056880823
2033	0 mph	0.793	0.09063	0.108243598
	5 mph	0.05598	0.03961	0.080212735
	25 mph	0.02742	0.02835	0.056967456
2034	0 mph	0.794	0.09055	0.108151436
	5 mph	0.05517	0.03958	0.080127532
	25 mph	0.02702	0.02835	0.057051814
2035	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744

2036	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2037	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2038	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2039	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2040	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2041	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2042	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2043	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2044	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2045	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2046	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2047	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2048	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744

2049	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2050	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2051	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2052	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2053	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744
2054	0 mph	0.795	0.09049	0.108062483
	5 mph	0.05427	0.03957	0.08007293
	25 mph	0.02659	0.02834	0.057139744

AVERAGE EMISSION FACTOR
SCAQMD 2015-2023

Speed	LHD2	MHD	HHD
0	0.81378	0.18344	0.13736
5	0.08789	0.13545	0.12926
25	0.04320	0.05574	0.06849

Speed	Weighted Average Emissions
0	**0.26238**
5	**0.12366**
25	**0.06131**

Year	Speed	LHD2	MHD	HHD
2015	0 mph	0.833	0.33731	0.268041304
	5 mph	0.10456	0.33544	0.287271325
	25 mph	0.05103	0.10366	0.101431042
2016	0 mph	0.827	0.2769	0.147376333
	5 mph	0.10003	0.24432	0.157361366
	25 mph	0.04901	0.08605	0.074350813
2017	0 mph	0.821	0.23492	0.125406403
	5 mph	0.09554	0.18951	0.125014181
	25 mph	0.04698	0.07246	0.066067444
2018	0 mph	0.816	0.20515	0.122676517
	5 mph	0.09087	0.15078	0.118566915
	25 mph	0.04482	0.06203	0.065362932
2019	0 mph	0.811	0.17766	0.120390429
	5 mph	0.08725	0.11623	0.112288546
	25 mph	0.04278	0.05281	0.064381352
2020	0 mph	0.808	0.13307	0.116801038
	5 mph	0.08328	0.06054	0.098578644
	25 mph	0.04091	0.03907	0.062610457
2021	0 mph	0.805	0.09759	0.113728567
	5 mph	0.0796	0.04186	0.089326311
	25 mph	0.03928	0.02913	0.061320013
2022	0 mph	0.803	0.09557	0.111612805
	5 mph	0.07657	0.04107	0.088107247
	25 mph	0.03779	0.02868	0.060683822
2023	0 mph	0.8	0.0928	0.110180944
	5 mph	0.07335	0.03936	0.086858627
	25 mph	0.03621	0.02776	0.060202161