Appendix B:
Health Risk Assessment

1. Health Risk Assessment

1.1 CONSTRUCTION HEALTH RISK ASSESSMENT

SCR Enterprises, the project applicant, is proposing the Canyon Crossings Mixed-Use Project (proposed project) that would involve the construction of a commercial and residential development on a 1.57-acre site. The project site is located at 10625 South Foothill Boulevard in the southwest region of the City of Cupertino, Santa Clara County, California. The proposed project would involve demolishing all the existing structures and redeveloping the site with 4,536 square feet of commercial space and up to 18 residential units comprised of a mix of single-family, duplex, and triplex units. All structures would be two stories (30 feet) in height and a one-level of below-grade parking garage would be located under the mixed-use portion of the project. The following provides the background methodology used for the construction health risk assessment for the proposed project.

The latest version of the Bay Area Air Quality Management District (BAAQMD) CEQA Air Quality Guidelines requires projects to evaluate the impacts of construction activities on sensitive receptors (BAAQMD, 2017). Project construction is anticipated to take place starting at the beginning of June 2020 and be completed by the end of March 2021 (approximately 209 work days). The nearest sensitive receptors to the project site include the adjacent one-story and two-story single-family residences approximately 20 to 50 feet from the site property lines to the north, west, and south. The BAAQMD has developed *Screening Tables for Air Toxics Evaluation During Construction* (2017) that evaluate construction-related health risks associated with residential, commercial, and industrial projects. According to the screening tables, the residences are closer than the distance of 100 meters (328 feet) that would screen out potential health risks and therefore could be potentially impacted from the proposed construction activities. As a result, a site-specific construction health risk assessment (HRA) has been prepared for the proposed project. This HRA considers the health impact to off-site sensitive receptors (children at the nearby residences) from construction emissions at the project site, including diesel equipment exhaust (diesel particulate matter or DPM) and particulate matter less than 2.5 microns ($PM_{2.5}$).

It should be noted that these health impacts are based on conservative (i.e., health protective) assumptions. The United States Environmental Protection Agency (USEPA, 2005) and the Office of Environmental Health Hazard Assessment (OEHHA, 2015) note that conservative assumptions used in a risk assessment are intended to ensure that the estimated risks do not underestimate the actual risks. Therefore, the estimated risks may not necessarily represent actual risks experienced by populations at or near a site. The use of conservative assumptions tends to produce upper-bound estimates of exposure and thus risk.

For residential-based receptors, the following conservative assumptions were used:

- It was assumed that maximum-exposed off-site residential receptors (both children and adults) stood outdoors and are subject to DPM at their residence for 8 hours per day, and approximately 260

construction days per year. In reality, California residents typically will spend on average 2 hours per day outdoors at their residences (USEPA, 2011). This would result in lower exposures to construction related DPM emissions and lower estimated risk values.

- The calculated risk for infants from third trimester to age 2 is multiplied by a factor of 10 to account for early life exposure and uncertainty in child versus adult exposure impacts (OEHHA, 2015).

1.2 METHODOLOGY AND SIGNIFICANCE THRESHOLDS

For this HRA, the BAAQMD significance thresholds were deemed to be appropriate and the thresholds that were used for this project are shown below:

- Excess cancer risk of more than 10 in a million
- Non-cancer hazard index (chronic or acute) greater than 1.0
- Incremental increase in average annual $PM_{2.5}$ concentration of greater than 0.3 $\mu g/m^3$

The methodology used in this HRA is consistent with the following BAAQMD and the OEHHA guidance documents:

- BAAQMD, 2017. *California Environmental Quality Act Air Quality Guidelines*. May 2017.
- BAAQMD, 2010. *Screening Tables for Air Toxics Evaluation During Construction*. May 2010.
- BAAQMD, 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards*. Version 3.0. May 2012.
- OEHHA. 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments*. February, 2015.

Potential exposures to DPM and $PM_{2.5}$ from proposed project construction were evaluated for off-site sensitive receptors in close proximity to the site. Pollutant concentrations were estimated using an air dispersion model, and excess lifetime cancer risks and chronic non-cancer hazard indexes were calculated. These risks were then compared to the significance thresholds adopted for this HRA.

1.3 CONSTRUCTION EMISSIONS

Construction emissions were calculated as average daily emissions in pounds per day, using the proposed construction schedule and the latest version of California Emissions Estimation Model, known as CalEEMod Version 2016.3.2 (CAPCOA, 2016). DPM emissions were based on the CalEEMod construction runs, using annual exhaust PM_{10} construction emissions presented in pounds (lbs) per day. The $PM_{2.5}$ emissions were taken from the CalEEMod output for exhaust $PM_{2.5}$ also presented in lbs per day.

The project was assumed to take place over 10 months (209 work days) from beginning of June 2020 to March 2021. The average daily emission rates from construction equipment used during the proposed project were determined by dividing the annual average emissions for each construction year by the number of construction days per year for each calendar year of construction (i.e., 2020 and 2021). The off-site hauling emission rates were adjusted to evaluate localized emissions from the 0.26-mile haul route within 1,000 feet

of the project site. The CalEEMod construction emissions output and emission rate calculations are provided in Appendix A of the HRA.

1.4 DISPERSION MODELING

Air quality modeling was performed using the AERMOD atmospheric dispersion model to assess the impact of emitted compounds on sensitive receptors near the project. The model is a steady state Gaussian plume model and is an approved model by BAAQMD for estimating ground level impacts from point and fugitive sources in simple and complex terrain. The on-site construction emissions for the project were modeled as poly-area sources. The off-site mobile sources were modeled as adjacent line volume sources. The model requires additional input parameters, including chemical emission data and local meteorology. Inputs for the construction emission rates are those described in Section 1.3. Meteorological data obtained from the BAAQMD for the nearest representative meteorological station (Moffett Federal Airfield Airport) with the five latest available years (2009 to 2013) of record were used to represent local weather conditions and prevailing winds.

The modeling analysis also considered the spatial distribution and elevation of each emitting source in relation to the sensitive receptors. To accommodate the model's Cartesian grid format, direction-dependent calculations were obtained by identifying the Universal Transverse Mercator (UTM) coordinates for each source location. In addition, digital elevation model (DEM) data for the area were obtained and included in the model runs to account for complex terrain. An emission release height of 4.15 meters was used as representative of the stack exhaust height for off-road construction equipment and diesel truck traffic, and an initial vertical dispersion parameter of 1.93 m was used, per California Air Resources Board (CARB) guidance (2000).

To determine contaminant impacts during construction hours, the model's Season-Hour-Day (HRDOW) scalar option was invoked to predict flagpole-level concentrations (1.5 m for ground-floor receptors) for construction emissions generated between the hours of 7:00 AM and 4:00 PM with a 1-hour lunch break. In addition, a scalar factor was applied to the risk calculations to account for the number of days residents are exposed to construction emissions per year.

A unit emission rate of 1 gram per second was used for all modeling runs. The unit emission rates were proportioned over the poly-area sources for on-site construction emissions and divided between the volume sources for off-site hauling emissions. The maximum modeled concentrations from the output files were then multiplied by the emission rates calculated in Appendix A to obtain the maximum flagpole-level concentrations at the off-site maximum exposed receptors (MER). The off-site MER is the single family residence approximately 20 feet south of the site. The MER location is the receptor location associated with the maximum predicted AERMOD concentrations from the on-site emission source. The calculated on-site emission rates are approximately 3 to 4 orders of magnitude higher than the calculated off-site emission rates (see Appendix A). Therefore, the maximum concentrations associated with the on-site emission sources produce the highest overall ground-level MER concentrations and, consequently, higher calculated health risks.

The air dispersion model output for the emission sources is presented in Appendix B. The model output DPM and $PM_{2.5}$ concentrations from the construction emission sources are provided in Appendix C.

1.5 RISK CHARACTERIZATION

1.5.1 Carcinogenic Chemical Risk

A threshold of ten in a million ($10x10^{-6}$) has been established as a level posing no significant risk for exposures to carcinogens. Health risks associated with exposure to carcinogenic compounds can be 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 cancer potency factor (CPF), a measure of the carcinogenic potential of a chemical when a dose is received through the inhalation pathway. It is an upper-limit 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 lifetime of 70 years.

Recent guidance from OEHHA recommends a refinement to the standard point estimate approach with the use of age-specific breathing rates and age sensitivity factors (ASFs) to assess risk for susceptible subpopulations such as children. For the inhalation pathway, the procedure requires the incorporation of several discrete variates to effectively quantify dose for each age group. Once determined, contaminant dose is multiplied by the cancer potency factor in units of inverse dose expressed in milligrams per kilogram per day $(mg/kg/day)^{-1}$ to derive the cancer risk estimate. Therefore, to accommodate the unique exposures associated with the residential receptors, the following dose algorithm was used.

$$\text{Dose}_{\text{AIR,per age group}} = (C_{air} \times EF \times [\frac{BR}{BW}] \times A \times CF)$$

Where:

$Dose_{AIR}$	=	dose by inhalation (mg/kg-day), per age group
C_{air}	=	concentration of contaminant in air ($\mu g/m^3$)
EF	=	exposure frequency (number of days/365 days)
BR/BW	=	daily breathing rate normalized to body weight (L/kg-day)
A	=	inhalation absorption factor (default = 1)
CF	=	conversion factor ($1x10^{-6}$, µg to mg, L to m^3)

The inhalation absorption factor (A) is a unitless factor that is only used if the cancer potency factor included a correction for absorption across the lung. The default value of 1 was used for this assessment. For residential receptors, the exposure frequency (EF) of 0.96 is used to represent 350 days per year to allow for a two week period away from home each year (OEHHA, 2015). The 95th percentile daily breathing rates (BR/BW), exposure duration (ED), age sensitivity factors (ASFs), and fraction of time at home (FAH) for the various age groups are provided herein:

Age Groups	BR/BW (L/kg-day)	ED	ASF	FAH
Third trimester	361	0.25	10	0.85
0-2 age group	1,090	2	10	0.85
2-9 age group	861	7	3	0.72
2-16 age group	745	14	3	0.72

16-30 age group	335	14	1	0.73
16-70 age group	290	54	1	0.73

For construction analysis, the exposure duration spans the length of construction (e.g. 209 work days). As the length of construction is equal to 0.83-year, only the third trimester and 0-2 age bins apply to the construction analysis for the off-site residential receptors.

To calculate the overall cancer risk, the risk for each appropriate age group is calculated per the following equation:

$$\text{Cancer Risk}_{\text{AIR}} = \text{Dose}_{\text{AIR}} \times \text{CPF} \times \text{ASF} \times \text{FAH} \times \frac{\text{ED}}{AT}$$

Where:

Dose_{AIR}	=	dose by inhalation (mg/kg-day), per age group
CPF	=	cancer potency factor, chemical-specific $(\text{mg/kg-day})^{-1}$
ASF	=	age sensitivity factor, per age group
FAH	=	fraction of time at home, per age group (for residential receptors only)
ED	=	exposure duration (years)
AT	=	averaging time period over which exposure duration is averaged (70 years)

The CPFs used in the assessment were obtained from OEHHA guidance. The excess lifetime cancer risks during the construction period to the maximally exposed resident were calculated based on the factors provided above. The cancer risks for each age group are summed to estimate the total cancer risk for each toxic chemical species. For purposes of this assessment and as stated, the calculated residential cancer risks associated with construction activities are based on the 3rd trimester and 0-2 year old age groups. The final step converts the cancer risk in scientific notation to a whole number that expresses the cancer risk in "chances per million" by multiplying the cancer risk by a factor of $1x10^6$ (i.e. 1 million).

The calculated results are provided in Appendix C.

1.5.2 Non-Carcinogenic Hazards

An evaluation was also conducted of the potential non-cancer effects of chronic chemical exposures. Adverse health effects are evaluated by comparing the annual receptor level (flagpole) concentration of each chemical compound with the appropriate reference exposure limit (REL). Available RELs promulgated by OEHHA were considered in the assessment.

The hazard index approach was used to quantify non-carcinogenic impacts. The hazard index assumes that chronic sub-threshold exposures adversely affect a specific organ or organ system (toxicological endpoint). For each discrete chemical exposure, target organs presented in regulatory guidance were used. To calculate the hazard index, each chemical concentration or dose is divided by the appropriate toxicity value. This ratio is summed for compounds affecting the same toxicological endpoint. A health hazard is presumed to exist where the total equals or exceeds one.

The chronic hazard analysis for DPM is provided in Appendix C. The calculations contain the relevant exposure concentrations and corresponding reference dose values used in the evaluation of non-carcinogenic exposures.

1.5.3 Criteria Pollutants

The BAAQMD has recently incorporated $PM_{2.5}$ into the District's CEQA significance thresholds due to recent studies that show adverse health impacts from exposure to this pollutant. An incremental increase of greater than 0.3 $\mu g/m^3$ for the annual average $PM_{2.5}$ concentration is considered to be a significant impact.

1.6 CONSTRUCTION HRA RESULTS

The calculated results are provided in Appendix C and the results are summarized in Table 1.

TABLE 1. CONSTRUCTION RISK SUMMARY - UNMITIGATED

Receptor	Cancer Risk (per million)	Chronic Hazards	$PM_{2.5}$ ($\mu g/m^3$)
Maximum Exposed Receptor – Off-site Residences	58.4	0.27	0.68
BAAQMD Threshold	10	1.0	0.30
Exceeds Threshold?	**Yes**	**No**	**Yes**

Note: Cancer risk calculated using 2015 OEHHA HRA guidance.

Cancer risk for the maximum exposed receptor (MER) from project-related construction emissions was calculated to be 58.4 in a million, which exceeds the 10 in a million significance threshold. In accordance with the latest 2015 OEHHA guidance, the calculated total cancer risk conservatively assumes that the risk for the MER consists of a pregnant woman in the third trimester that subsequently gives birth to an infant during the approximately 10-month construction period; therefore, all calculated risk values were multiplied by a factor of 10. In addition, it was conservatively assumed that the residents were outdoors 8 hours a day, 260 construction days per year and exposed to all of the daily construction emissions.

For non-carcinogenic effects, the chronic hazard index identified for each toxicological endpoint totaled less than one for all the off-site sensitive receptors. Therefore, chronic non-carcinogenic hazards are within acceptable limits. The highest annual $PM_{2.5}$ concentration of 0.68 $\mu g/m^3$ exceeds the BAAQMD significance threshold of 0.3 micrograms per cubic meter ($\mu g/m^3$).

Because the incremental cancer risk and maximum annual $PM_{2.5}$ concentration for the MER would exceed BAAQMD's significance thresholds due to construction activities associated with the proposed project, the following mitigation measure is proposed:

Mitigation Measure AQ-2: During construction, the construction contractor(s) shall:

- Use construction equipment that meets the United States Environmental Protection Agency's (EPA) Tier 4 Interim emissions standards for off-road diesel-powered construction equipment with more than 50 horsepower, unless it can be demonstrated to the City of Cupertino Building Division that such equipment is not available. Any emissions control device used by the

contractor shall achieve emissions reductions that are no less than what could be achieved by Tier 4 Interim emissions standards for a similarly sized engine, as defined by the California Air Resources Board's regulations.

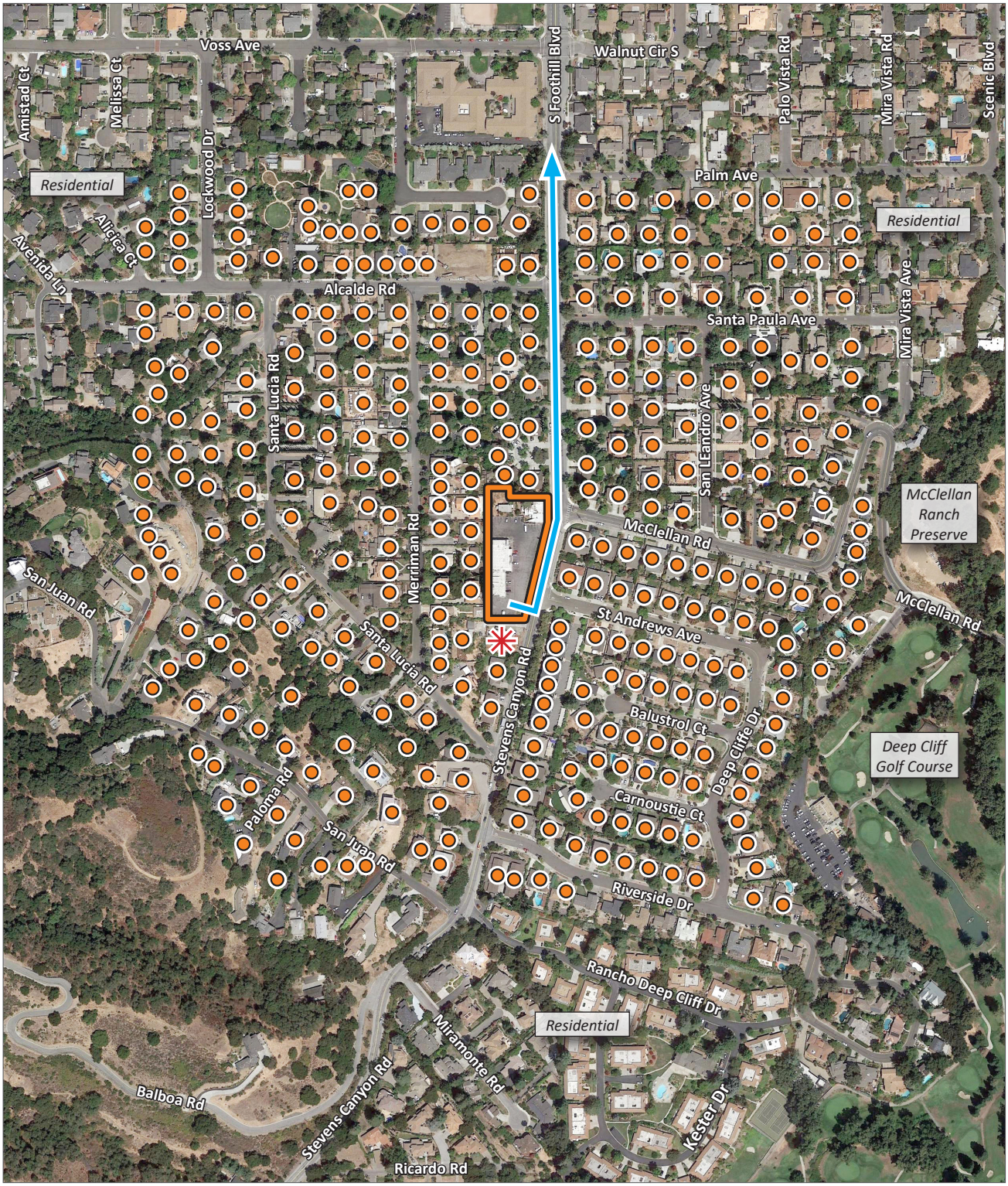
- Prior to issuance of any construction permit, ensure that all construction plans submitted to the City of Cupertino Planning Department and/or Building Division clearly show the requirement for EPA Tier 4 Interim emissions standards for construction equipment over 50 horsepower.
- Maintain a list of all operating equipment in use on the project site for verification by the City of Cupertino Building Division official or his/her designee. The construction equipment list shall state the makes, models, and number of construction equipment on-site.
- Ensure that all equipment shall be properly serviced and maintained in accordance with the manufacturer's recommendations.
- Communicate with all sub-contractors in contracts and construction documents that all nonessential idling of construction equipment is restricted to 5 minutes or less in compliance with California Air Resources Board Rule 2449 and is responsible for ensuring that this requirement is met.

Mitigation Measure AQ-2 would reduce the project's localized construction emissions, as shown in Table 2. The results indicate that, with mitigation, cancer risk would be less than the BAAQMD's significance thresholds for residential-based receptors. Therefore, the project would not expose off-site sensitive receptors to substantial concentrations of air pollutant emissions during construction and impacts would be *less than significant* with mitigation.

TABLE 2 CONSTRUCTION RISK SUMMARY – MITIGATED

Receptor	Cancer Risk (per million)	Chronic Hazards	$PM_{2.5}$ ($\mu g/m^3$)[a]
Maximum Exposed Receptor – Off-site Residences	7.5	0.036	0.09
BAAQMD Threshold	10	1.0	0.3
Exceeds Threshold?	**No**	**No**	**No**

Risks incorporate Mitigation Measure AQ-2, which requires all equipment of 50 horsepower or more be fitted with engines that meet the EPA's Tier 4 Interim emissions standards.
Note: Cancer risk calculated using 2015 OEHHA HRA guidance.



Source: Google Earth Professional, 2019; PlaceWorks, 2019.

0 500
Scale (Feet)

Project Site
Truck Route
Maximum Exposed Receptor - Residential
Receptors - Residential

Figure 1
Site and Off-Site Receptor Locations

2. References

Bay Area Air Quality Management District. 2017. *California Environmental Quality Act Air Quality Guidelines.*

———. 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards.* Version 3.0. Dated May 2012.

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California Air Pollution Control Officers Association (CAPCOA). 2016. California Emissions Estimator Model (CalEEMod). Version 2016.3.2. Prepared by: ENVIRON International Corporation and the California Air Districts.

California Air Resources Board (CARB). 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.*

———. 2015. *Meteorological Files.* https://www.arb.ca.gov/toxics/harp/metfiles2.htm

Office of Environmental Health Hazard Assessment (OEHHA). 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments.* Dated February 2015.

United States Environmental Protection Agency (USEPA). 2011. *Exposure Factors Handbook 2011 Edition (Final).* EPA/600/R-09/052F, 2011.

_____. 2005. *Guideline on Air Quality Models* (Revised). EPA-450/2-78-027R.

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Appendix A. Emission Rate Calculations

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Construction Emissions - DPM and PM2.5
Input to Risk Tables

On-site Construction Emissions		DPM [1]	$PM_{2.5}$ [2]
2020 On-site Emissions	Average Daily Emissions (lbs/day)	0.70	0.66
	Average Daily Emissions (lbs/hr)	8.79E-02	8.27E-02
	Emission Rate (g/s)	1.11E-02	1.04E-02
2021 On-site Emissions	Average Daily Emissions (lbs/day)	0.63	0.60
	Average Daily Emissions (lbs/hr)	7.88E-02	7.51E-02
	Emission Rate (g/s)	9.93E-03	9.47E-03

Note: Emissions assumed to be evenly distributed over entire construction phase area.

Off-site Construction Emissions		DPM [1]	$PM_{2.5}$ [2]
2020 Off-site Emissions	Haul Length Daily Emissions (lbs/day)	0.027	0.026
	Hauling Emissions w/in 1,000 ft (lbs/day) [3]	3.49E-04	3.38E-04
	Emission Rate (lbs/hr)	4.37E-05	4.22E-05
	Emission Rate (g/s)	5.50E-06	5.32E-06
2021 Off-site Emissions	Haul Length Daily Emissions (lbs/day)	0.004	0.004
	Hauling Emissions w/in 1,000 ft (lbs/day) [3]	5.67E-05	5.20E-05
	Emission Rate (lbs/hr)	7.09E-06	6.50E-06
	Emission Rate (g/s)	8.93E-07	8.19E-07

Note: Emissions evenly distributed over 35 modeled volume sources.

Hours per work day (7:00 AM to 4:00 PM, 1-hour of breaks) [4] 8 hours

	Year	Workdays	Risk Scalar [5]
Total construction days per year	2020	154	0.59
	2021	55	0.21

Average Hauling Length (miles) 20.0

Haul Length within 1,000 ft of Site (mile) [3] 0.26

[1] DPM emissions taken as PM_{10} exhaust emissions from CalEEMod average daily emissions.

[2] $PM_{2.5}$ emissions taken as $PM_{2.5}$ exhaust emissions from CalEEMod average daily emissions.

[3] Emissions from CalEEMod offsite average daily emissions, which is based on proportioned haul truck trip distances proportioned to evaluate emissions from the 0.26-mile route within 1,000 of the project site.

[4] Work hours applied in By Hour/Day (HRDOW) variable emissions module in air dispersion model (see App B - Air Dispersion Model Output Files).

[5] Residential risk scalars determined for each year of construction to adjust receptor exposures to the exposure durations for each construction year (see App C - Risk Calculations).

Construction Emissions - DPM and PM2.5
Input to Risk Tables
With Mitigation - Tier 4 Interim Engines for Eq. > 50 hp

On-site Construction Emissions - Mitigated		DPM [1]	$PM_{2.5}$ [2]
2020 On-site Emissions	Average Daily Emissions (lbs/day)	0.08	0.08
	Average Daily Emissions (lbs/hr)	1.06E-02	1.06E-02
	Emission Rate (g/s)	1.34E-03	1.34E-03
2021 On-site Emissions	Average Daily Emissions (lbs/day)	0.09	0.09
	Average Daily Emissions (lbs/hr)	1.15E-02	1.15E-02
	Emission Rate (g/s)	1.44E-03	1.44E-03

Note: Emissions assumed to be evenly distributed over entire construction phase area.

Off-site Construction Emissions - Mitigated		DPM [1]	$PM_{2.5}$ [2]
2020 Off-site Emissions	Haul Length Daily Emissions (lbs/day)	0.027	0.026
	Hauling Emissions w/in 1,000 ft (lbs/day) [3]	3.49E-04	3.38E-04
	Emission Rate (lbs/hr)	4.37E-05	4.22E-05
	Emission Rate (g/s)	5.50E-06	5.32E-06
2021 Off-site Emissions	Haul Length Daily Emissions (lbs/day)	0.004	0.004
	Hauling Emissions w/in 1,000 ft (lbs/day) [3]	5.67E-05	5.20E-05
	Emission Rate (lbs/hr)	7.09E-06	6.50E-06
	Emission Rate (g/s)	8.93E-07	8.19E-07

Note: Emissions evenly distributed over 35 modeled volume sources.

Hours per work day (7:00 AM to 4:00 PM, 1-hour of breaks) [4] 8 hours

	Year	Workdays	Risk Scalar [5]
Total construction days per year	2020	154	0.59
	2021	55	0.21

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Haul Length within 1,000 ft of Site (mile) [3] 0.26

[1] DPM emissions taken as PM_{10} exhaust emissions from CalEEMod average daily emissions.

[2] $PM_{2.5}$ emissions taken as $PM_{2.5}$ exhaust emissions from CalEEMod average daily emissions.

[3] Emissions from CalEEMod offsite average daily emissions, which is based on proportioned haul truck trip distances proportioned to evaluate emissions from the 0.26-mile route within 1,000 of the project site.

[4] Work hours applied in By Hour/Day (HRDOW) variable emissions module in air dispersion model (see App B - Air Dispersion Model Output Files).

[5] Residential risk scalars determined for each year of construction to adjust receptor exposures to the exposure durations for each construction year (see App C - Risk Calculations).

Appendix B. Air Dispersion Model Output

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Model Output
Unit Emission Rate (1 g/s)

```
*** AERMOD - VERSION  18081 ***   *** Canyon Crossing, Construction HRA                                  ***        09/13/19
*** AERMET - VERSION  14134 ***   *** Cupertino, CA                                                      ***        10:51:08
                                                                                                                  PAGE   1
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  URBAN

                                        ***     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    36 Source(s),
  for Total of    1 Urban Area(s):
  Urban Population =   1938000.0 ;  Urban Roughness Length =  1.000 m

**Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  OTHER

**Model Calculates PERIOD Averages Only

**This Run Includes:     36 Source(s);       2 Source Group(s); and     465 Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:     35 VOLUME source(s)
                and:      1 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with      0 line(s)


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

Model Output
Unit Emission Rate (1 g/s)

```
**The AERMET Input Meteorological Data Version Date:  14134

**Output Options Selected:
         Model Outputs Tables of PERIOD 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) =    11.90 ;  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 =      3.6 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   cocu15.err
**File for Summary of Results:   cocu15.sum
```

Model Output
Unit Emission Rate (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000001	0	0.28571E-01	582508.8	4130023.4	126.7	4.15	5.67	1.93	YES	HRDOW
L0000002	0	0.28571E-01	582511.9	4130035.2	126.8	4.15	5.67	1.93	YES	HRDOW
L0000003	0	0.28571E-01	582515.0	4130047.0	126.9	4.15	5.67	1.93	YES	HRDOW
L0000004	0	0.28571E-01	582518.1	4130058.8	127.1	4.15	5.67	1.93	YES	HRDOW
L0000005	0	0.28571E-01	582521.3	4130070.5	127.4	4.15	5.67	1.93	YES	HRDOW
L0000006	0	0.28571E-01	582524.4	4130082.3	127.4	4.15	5.67	1.93	YES	HRDOW
L0000007	0	0.28571E-01	582527.5	4130094.1	127.4	4.15	5.67	1.93	YES	HRDOW
L0000008	0	0.28571E-01	582530.6	4130105.9	127.7	4.15	5.67	1.93	YES	HRDOW
L0000009	0	0.28571E-01	582531.5	4130118.0	127.8	4.15	5.67	1.93	YES	HRDOW
L0000010	0	0.28571E-01	582531.3	4130130.1	128.1	4.15	5.67	1.93	YES	HRDOW
L0000011	0	0.28571E-01	582531.1	4130142.3	128.1	4.15	5.67	1.93	YES	HRDOW
L0000012	0	0.28571E-01	582530.9	4130154.5	128.0	4.15	5.67	1.93	YES	HRDOW
L0000013	0	0.28571E-01	582530.7	4130166.7	128.0	4.15	5.67	1.93	YES	HRDOW
L0000014	0	0.28571E-01	582530.5	4130178.9	128.1	4.15	5.67	1.93	YES	HRDOW
L0000015	0	0.28571E-01	582530.3	4130191.1	128.1	4.15	5.67	1.93	YES	HRDOW
L0000016	0	0.28571E-01	582530.1	4130203.3	128.2	4.15	5.67	1.93	YES	HRDOW
L0000017	0	0.28571E-01	582529.9	4130215.5	128.2	4.15	5.67	1.93	YES	HRDOW
L0000018	0	0.28571E-01	582529.7	4130227.7	128.2	4.15	5.67	1.93	YES	HRDOW
L0000019	0	0.28571E-01	582529.5	4130239.9	128.2	4.15	5.67	1.93	YES	HRDOW
L0000020	0	0.28571E-01	582529.3	4130252.0	128.0	4.15	5.67	1.93	YES	HRDOW
L0000021	0	0.28571E-01	582529.1	4130264.2	127.8	4.15	5.67	1.93	YES	HRDOW
L0000022	0	0.28571E-01	582528.9	4130276.4	127.8	4.15	5.67	1.93	YES	HRDOW
L0000023	0	0.28571E-01	582528.7	4130288.6	127.7	4.15	5.67	1.93	YES	HRDOW
L0000024	0	0.28571E-01	582528.5	4130300.8	127.6	4.15	5.67	1.93	YES	HRDOW
L0000025	0	0.28571E-01	582528.3	4130313.0	127.6	4.15	5.67	1.93	YES	HRDOW
L0000026	0	0.28571E-01	582528.1	4130325.2	127.5	4.15	5.67	1.93	YES	HRDOW
L0000027	0	0.28571E-01	582527.9	4130337.4	127.2	4.15	5.67	1.93	YES	HRDOW
L0000028	0	0.28571E-01	582527.7	4130349.6	126.9	4.15	5.67	1.93	YES	HRDOW
L0000029	0	0.28571E-01	582527.5	4130361.8	126.7	4.15	5.67	1.93	YES	HRDOW
L0000030	0	0.28571E-01	582527.3	4130374.0	126.5	4.15	5.67	1.93	YES	HRDOW
L0000031	0	0.28571E-01	582527.1	4130386.1	126.4	4.15	5.67	1.93	YES	HRDOW
L0000032	0	0.28571E-01	582526.9	4130398.3	126.2	4.15	5.67	1.93	YES	HRDOW
L0000033	0	0.28571E-01	582526.7	4130410.5	126.0	4.15	5.67	1.93	YES	HRDOW
L0000034	0	0.28571E-01	582526.5	4130422.7	125.8	4.15	5.67	1.93	YES	HRDOW
L0000035	0	0.28571E-01	582526.3	4130434.9	125.7	4.15	5.67	1.93	YES	HRDOW

Model Output
Unit Emission Rate (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
ONSITE	0	0.16964E-03	582463.6	4130135.3	130.0	4.15	7	1.93	YES	HRDOW

Model Output
Unit Emission Rate (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
HAUL	L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 , L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 , L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , L0000029 , L0000030 , L0000031 , L0000032 , L0000033 , L0000034 , L0000035 ,
ONSITE	ONSITE ,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	1938000.	ONSITE , L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 , L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 , L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , L0000029 , L0000030 , L0000031 , L0000032 , L0000033 , L0000034 , L0000035 ,

Model Output
Unit Emission Rate (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = ONSITE ; SOURCE TYPE = AREAPOLY :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
DAY OF WEEK = WEEKDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.1000E+01
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.1000E+01	13	.0000E+00	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
DAY OF WEEK = SATURDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
DAY OF WEEK = SUNDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = L0000001 thru L0000035 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
DAY OF WEEK = WEEKDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.1000E+01
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.1000E+01	13	.0000E+00	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
DAY OF WEEK = SATURDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
DAY OF WEEK = SUNDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

Model Output
Unit Emission Rate (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(	582267.2,	4129774.5,	180.7,	285.7,	1.5);	(582297.2,	4129774.5,	171.6,	285.7,	1.5);
(	582327.2,	4129774.5,	163.3,	285.7,	1.5);	(582357.2,	4129774.5,	157.0,	285.7,	1.5);
(	582387.2,	4129774.5,	150.7,	285.7,	1.5);	(582417.2,	4129774.5,	146.0,	285.7,	1.5);
(	582447.2,	4129774.5,	142.9,	285.7,	1.5);	(582477.2,	4129774.5,	139.1,	285.7,	1.5);
(	582507.2,	4129774.5,	138.0,	285.7,	1.5);	(582537.2,	4129774.5,	134.9,	285.7,	1.5);
(	582567.2,	4129774.5,	133.0,	285.7,	1.5);	(582597.2,	4129774.5,	131.3,	285.7,	1.5);
(	582627.2,	4129774.5,	129.0,	285.7,	1.5);	(582657.2,	4129774.5,	126.3,	285.7,	1.5);
(	582687.2,	4129774.5,	124.8,	285.7,	1.5);	(582717.2,	4129774.5,	125.2,	285.7,	1.5);
(	582747.2,	4129774.5,	124.0,	285.7,	1.5);	(582237.2,	4129804.5,	184.9,	285.7,	1.5);
(	582267.2,	4129804.5,	178.3,	285.7,	1.5);	(582297.2,	4129804.5,	172.1,	285.7,	1.5);
(	582327.2,	4129804.5,	164.6,	285.7,	1.5);	(582357.2,	4129804.5,	159.0,	285.7,	1.5);
(	582387.2,	4129804.5,	155.1,	285.7,	1.5);	(582417.2,	4129804.5,	147.1,	285.7,	1.5);
(	582447.2,	4129804.5,	142.6,	285.7,	1.5);	(582477.2,	4129804.5,	138.4,	285.7,	1.5);
(	582507.2,	4129804.5,	136.7,	285.7,	1.5);	(582537.2,	4129804.5,	135.3,	285.7,	1.5);
(	582567.2,	4129804.5,	132.6,	285.7,	1.5);	(582597.2,	4129804.5,	131.6,	285.7,	1.5);
(	582627.2,	4129804.5,	128.2,	285.7,	1.5);	(582657.2,	4129804.5,	125.2,	285.7,	1.5);
(	582687.2,	4129804.5,	124.3,	285.7,	1.5);	(582717.2,	4129804.5,	125.0,	285.7,	1.5);
(	582237.2,	4129834.5,	184.4,	285.7,	1.5);	(582267.2,	4129834.5,	177.3,	285.7,	1.5);
(	582297.2,	4129834.5,	172.2,	285.7,	1.5);	(582327.2,	4129834.5,	168.7,	285.7,	1.5);
(	582357.2,	4129834.5,	165.2,	285.7,	1.5);	(582387.2,	4129834.5,	160.4,	285.7,	1.5);
(	582417.2,	4129834.5,	147.6,	285.7,	1.5);	(582447.2,	4129834.5,	143.8,	285.7,	1.5);
(	582477.2,	4129834.5,	136.6,	285.7,	1.5);	(582507.2,	4129834.5,	134.5,	285.7,	1.5);
(	582537.2,	4129834.5,	132.9,	285.7,	1.5);	(582567.2,	4129834.5,	129.2,	285.7,	1.5);
(	582597.2,	4129834.5,	128.0,	285.7,	1.5);	(582627.2,	4129834.5,	126.5,	285.7,	1.5);
(	582657.2,	4129834.5,	124.5,	285.7,	1.5);	(582687.2,	4129834.5,	123.4,	285.7,	1.5);
(	582717.2,	4129834.5,	123.1,	285.7,	1.5);	(582207.2,	4129864.5,	185.2,	285.7,	1.5);
(	582237.2,	4129864.5,	180.4,	285.7,	1.5);	(582267.2,	4129864.5,	176.3,	285.7,	1.5);
(	582297.2,	4129864.5,	171.9,	285.7,	1.5);	(582327.2,	4129864.5,	170.9,	285.7,	1.5);
(	582357.2,	4129864.5,	165.9,	285.7,	1.5);	(582387.2,	4129864.5,	160.1,	285.7,	1.5);
(	582417.2,	4129864.5,	144.7,	285.7,	1.5);	(582447.2,	4129864.5,	139.4,	285.7,	1.5);
(	582477.2,	4129864.5,	134.2,	285.7,	1.5);	(582507.2,	4129864.5,	131.7,	285.7,	1.5);
(	582537.2,	4129864.5,	130.4,	285.7,	1.5);	(582567.2,	4129864.5,	128.2,	285.7,	1.5);
(	582597.2,	4129864.5,	127.5,	285.7,	1.5);	(582627.2,	4129864.5,	126.2,	285.7,	1.5);
(	582657.2,	4129864.5,	124.5,	285.7,	1.5);	(582687.2,	4129864.5,	122.7,	285.7,	1.5);
(	582717.2,	4129864.5,	120.8,	285.7,	1.5);	(582177.2,	4129894.5,	186.5,	285.7,	1.5);
(	582207.2,	4129894.5,	179.9,	285.7,	1.5);	(582237.2,	4129894.5,	176.1,	285.7,	1.5);
(	582267.2,	4129894.5,	172.0,	285.7,	1.5);	(582297.2,	4129894.5,	167.8,	285.7,	1.5);
(	582327.2,	4129894.5,	165.9,	285.7,	1.5);	(582357.2,	4129894.5,	161.3,	285.7,	1.5);
(	582387.2,	4129894.5,	151.0,	285.7,	1.5);	(582417.2,	4129894.5,	140.6,	285.7,	1.5);
(	582447.2,	4129894.5,	134.8,	285.7,	1.5);	(582477.2,	4129894.5,	130.7,	285.7,	1.5);
(	582507.2,	4129894.5,	129.2,	285.7,	1.5);	(582537.2,	4129894.5,	127.6,	285.7,	1.5);
(	582567.2,	4129894.5,	126.7,	285.7,	1.5);	(582597.2,	4129894.5,	125.6,	285.7,	1.5);

Model Output
Unit Emission Rate (1 g/s)

```
( 582627.2, 4129894.5,     124.4,     285.7,       1.5);        ( 582657.2, 4129894.5,     123.9,     285.7,       1.5);
( 582687.2, 4129894.5,     122.6,     285.7,       1.5);        ( 582717.2, 4129894.5,     121.2,     285.7,       1.5);
( 582147.2, 4129924.5,     177.2,     285.7,       1.5);        ( 582177.2, 4129924.5,     178.1,     285.7,       1.5);
( 582207.2, 4129924.5,     177.9,     285.7,       1.5);        ( 582237.2, 4129924.5,     173.4,     285.7,       1.5);
( 582267.2, 4129924.5,     168.1,     285.7,       1.5);        ( 582297.2, 4129924.5,     160.5,     285.7,       1.5);
( 582327.2, 4129924.5,     152.4,     285.7,       1.5);        ( 582357.2, 4129924.5,     146.0,     285.7,       1.5);
( 582387.2, 4129924.5,     140.1,     285.7,       1.5);        ( 582417.2, 4129924.5,     132.3,     285.7,       1.5);
( 582447.2, 4129924.5,     130.6,     285.7,       1.5);        ( 582477.2, 4129924.5,     129.1,     285.7,       1.5);
( 582507.2, 4129924.5,     128.1,     285.7,       1.5);        ( 582537.2, 4129924.5,     125.8,     285.7,       1.5);
( 582567.2, 4129924.5,     124.6,     285.7,       1.5);        ( 582597.2, 4129924.5,     123.9,     285.7,       1.5);
( 582627.2, 4129924.5,     123.3,     285.7,       1.5);        ( 582657.2, 4129924.5,     122.9,     285.7,       1.5);
( 582687.2, 4129924.5,     122.5,     285.7,       1.5);        ( 582717.2, 4129924.5,     120.8,     285.7,       1.5);
( 582747.2, 4129924.5,     116.2,     285.7,       1.5);        ( 582147.2, 4129954.5,     170.9,     285.7,       1.5);
( 582177.2, 4129954.5,     167.8,     285.7,       1.5);        ( 582207.2, 4129954.5,     172.3,     285.7,       1.5);
( 582237.2, 4129954.5,     171.4,     285.7,       1.5);        ( 582267.2, 4129954.5,     164.2,     285.7,       1.5);
( 582297.2, 4129954.5,     153.9,     285.7,       1.5);        ( 582327.2, 4129954.5,     145.0,     285.7,       1.5);
( 582357.2, 4129954.5,     139.7,     285.7,       1.5);        ( 582387.2, 4129954.5,     135.1,     285.7,       1.5);
( 582417.2, 4129954.5,     131.6,     285.7,       1.5);        ( 582447.2, 4129954.5,     129.6,     285.7,       1.5);
( 582477.2, 4129954.5,     128.2,     285.7,       1.5);        ( 582507.2, 4129954.5,     127.3,     285.7,       1.5);
( 582537.2, 4129954.5,     125.8,     285.7,       1.5);        ( 582567.2, 4129954.5,     124.8,     285.7,       1.5);
( 582597.2, 4129954.5,     124.2,     285.7,       1.5);        ( 582627.2, 4129954.5,     124.0,     285.7,       1.5);
( 582657.2, 4129954.5,     123.7,     285.7,       1.5);        ( 582687.2, 4129954.5,     123.1,     285.7,       1.5);
( 582717.2, 4129954.5,     120.7,     285.7,       1.5);        ( 582747.2, 4129954.5,     117.5,     285.7,       1.5);
( 582777.2, 4129954.5,     110.7,     285.7,       1.5);        ( 582147.2, 4129984.5,     171.6,     285.7,       1.5);
( 582177.2, 4129984.5,     163.2,     285.7,       1.5);        ( 582207.2, 4129984.5,     161.7,     285.7,       1.5);
( 582237.2, 4129984.5,     160.8,     285.7,       1.5);        ( 582267.2, 4129984.5,     158.0,     285.7,       1.5);
( 582297.2, 4129984.5,     148.0,     285.7,       1.5);        ( 582327.2, 4129984.5,     141.0,     285.7,       1.5);
( 582357.2, 4129984.5,     137.5,     285.7,       1.5);        ( 582387.2, 4129984.5,     134.2,     285.7,       1.5);
( 582417.2, 4129984.5,     132.2,     285.7,       1.5);        ( 582447.2, 4129984.5,     129.7,     285.7,       1.5);
( 582477.2, 4129984.5,     128.1,     285.7,       1.5);        ( 582537.2, 4129984.5,     125.9,     285.7,       1.5);
( 582567.2, 4129984.5,     125.0,     285.7,       1.5);        ( 582597.2, 4129984.5,     124.2,     285.7,       1.5);
( 582627.2, 4129984.5,     123.7,     285.7,       1.5);        ( 582657.2, 4129984.5,     123.1,     285.7,       1.5);
( 582687.2, 4129984.5,     122.3,     285.7,       1.5);        ( 582717.2, 4129984.5,     121.7,     285.7,       1.5);
( 582747.2, 4129984.5,     120.4,     285.7,       1.5);        ( 582777.2, 4129984.5,     112.5,     285.7,       1.5);
( 582807.2, 4129984.5,     107.5,     285.7,       1.5);        ( 582147.2, 4130014.5,     175.7,     285.7,       1.5);
( 582177.2, 4130014.5,     162.9,     285.7,       1.5);        ( 582207.2, 4130014.5,     156.4,     285.7,       1.5);
( 582237.2, 4130014.5,     153.5,     285.7,       1.5);        ( 582267.2, 4130014.5,     149.5,     285.7,       1.5);
( 582297.2, 4130014.5,     147.2,     285.7,       1.5);        ( 582327.2, 4130014.5,     140.9,     285.7,       1.5);
( 582357.2, 4130014.5,     137.2,     285.7,       1.5);        ( 582387.2, 4130014.5,     134.8,     285.7,       1.5);
( 582417.2, 4130014.5,     132.3,     285.7,       1.5);        ( 582447.2, 4130014.5,     130.2,     285.7,       1.5);
( 582480.3, 4130004.7,     128.1,     285.7,       1.5);        ( 582537.2, 4130014.5,     125.8,     285.7,       1.5);
( 582567.2, 4130014.5,     124.7,     285.7,       1.5);        ( 582597.2, 4130014.5,     123.8,     285.7,       1.5);
( 582627.2, 4130014.5,     123.1,     285.7,       1.5);        ( 582657.2, 4130014.5,     123.0,     285.7,       1.5);
( 582687.2, 4130014.5,     122.8,     285.7,       1.5);        ( 582717.2, 4130014.5,     122.5,     285.7,       1.5);
( 582747.2, 4130014.5,     121.4,     285.7,       1.5);        ( 582777.2, 4130014.5,     116.8,     285.7,       1.5);
( 582807.2, 4130014.5,     110.4,     285.7,       1.5);        ( 582147.2, 4130044.5,     173.9,     285.7,       1.5);
( 582177.2, 4130044.5,     166.7,     285.7,       1.5);        ( 582207.2, 4130044.5,     156.3,     285.7,       1.5);
( 582237.2, 4130044.5,     150.3,     285.7,       1.5);        ( 582267.2, 4130044.5,     147.8,     285.7,       1.5);
```

Model Output
Unit Emission Rate (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(	582297.2,	4130044.5,	144.1,	285.7,	1.5);	(582327.2,	4130044.5,	140.6,	285.7,	1.5);
(	582357.2,	4130044.5,	137.2,	285.7,	1.5);	(582387.2,	4130044.5,	134.6,	285.7,	1.5);
(	582417.2,	4130044.5,	132.4,	285.7,	1.5);	(582447.2,	4130044.5,	130.3,	285.7,	1.5);
(	582537.2,	4130044.5,	126.5,	285.7,	1.5);	(582567.2,	4130044.5,	125.5,	285.7,	1.5);
(	582597.2,	4130044.5,	124.8,	285.7,	1.5);	(582627.2,	4130044.5,	124.1,	285.7,	1.5);
(	582657.2,	4130044.5,	123.6,	285.7,	1.5);	(582687.2,	4130044.5,	123.2,	285.7,	1.5);
(	582717.2,	4130044.5,	122.9,	285.7,	1.5);	(582747.2,	4130044.5,	122.1,	285.7,	1.5);
(	582777.2,	4130044.5,	121.1,	285.7,	1.5);	(582807.2,	4130044.5,	117.9,	285.7,	1.5);
(	582147.2,	4130074.5,	170.1,	285.7,	1.5);	(582177.2,	4130074.5,	163.2,	285.7,	1.5);
(	582207.2,	4130074.5,	155.5,	285.7,	1.5);	(582237.2,	4130074.5,	148.6,	285.7,	1.5);
(	582267.2,	4130074.5,	144.4,	285.7,	1.5);	(582297.2,	4130074.5,	142.4,	285.7,	1.5);
(	582327.2,	4130074.5,	139.7,	285.7,	1.5);	(582357.2,	4130074.5,	136.7,	285.7,	1.5);
(	582387.2,	4130074.5,	134.4,	285.7,	1.5);	(582417.2,	4130074.5,	132.1,	285.7,	1.5);
(	582447.2,	4130074.5,	130.4,	285.7,	1.5);	(582537.2,	4130074.5,	127.1,	285.7,	1.5);
(	582567.2,	4130074.5,	126.0,	285.7,	1.5);	(582597.2,	4130074.5,	125.3,	285.7,	1.5);
(	582627.2,	4130074.5,	124.2,	285.7,	1.5);	(582657.2,	4130074.5,	123.5,	285.7,	1.5);
(	582687.2,	4130074.5,	122.6,	285.7,	1.5);	(582717.2,	4130074.5,	122.2,	285.7,	1.5);
(	582747.2,	4130074.5,	121.9,	285.7,	1.5);	(582777.2,	4130074.5,	121.7,	285.7,	1.5);
(	582807.2,	4130074.5,	120.7,	285.7,	1.5);	(582147.2,	4130104.5,	163.3,	285.7,	1.5);
(	582177.2,	4130104.5,	156.0,	285.7,	1.5);	(582207.2,	4130104.5,	151.1,	285.7,	1.5);
(	582237.2,	4130104.5,	144.3,	285.7,	1.5);	(582267.2,	4130104.5,	141.7,	285.7,	1.5);
(	582297.2,	4130104.5,	140.4,	285.7,	1.5);	(582327.2,	4130104.5,	137.7,	285.7,	1.5);
(	582357.2,	4130104.5,	135.7,	285.7,	1.5);	(582387.2,	4130104.5,	133.8,	285.7,	1.5);
(	582417.2,	4130104.5,	132.2,	285.7,	1.5);	(582447.2,	4130104.5,	130.4,	285.7,	1.5);
(	582567.2,	4130104.5,	126.3,	285.7,	1.5);	(582597.2,	4130104.5,	125.1,	285.7,	1.5);
(	582627.2,	4130104.5,	124.3,	285.7,	1.5);	(582657.2,	4130104.5,	123.2,	285.7,	1.5);
(	582687.2,	4130104.5,	123.0,	285.7,	1.5);	(582717.2,	4130104.5,	122.3,	285.7,	1.5);
(	582747.2,	4130104.5,	121.9,	285.7,	1.5);	(582777.2,	4130104.5,	121.4,	285.7,	1.5);
(	582807.2,	4130104.5,	120.6,	285.7,	1.5);	(582147.2,	4130134.5,	157.4,	285.7,	1.5);
(	582177.2,	4130134.5,	148.5,	285.7,	1.5);	(582207.2,	4130134.5,	144.7,	285.7,	1.5);
(	582237.2,	4130134.5,	141.3,	285.7,	1.5);	(582267.2,	4130134.5,	139.5,	285.7,	1.5);
(	582297.2,	4130134.5,	138.2,	285.7,	1.5);	(582327.2,	4130134.5,	136.3,	285.7,	1.5);
(	582357.2,	4130134.5,	135.0,	285.7,	1.5);	(582387.2,	4130134.5,	133.4,	285.7,	1.5);
(	582417.2,	4130134.5,	132.2,	285.7,	1.5);	(582447.2,	4130134.5,	130.6,	285.7,	1.5);
(	582476.8,	4130149.0,	129.7,	285.7,	1.5);	(582507.1,	4130144.5,	129.1,	285.7,	1.5);
(	582567.2,	4130134.5,	126.9,	285.7,	1.5);	(582597.2,	4130134.5,	125.5,	285.7,	1.5);
(	582627.2,	4130134.5,	124.3,	285.7,	1.5);	(582657.2,	4130134.5,	123.4,	285.7,	1.5);
(	582687.2,	4130134.5,	122.8,	285.7,	1.5);	(582717.2,	4130134.5,	122.0,	285.7,	1.5);
(	582747.2,	4130134.5,	121.5,	285.7,	1.5);	(582777.2,	4130134.5,	121.2,	285.7,	1.5);
(	582807.2,	4130134.5,	120.6,	285.7,	1.5);	(582147.2,	4130164.5,	147.4,	285.7,	1.5);
(	582177.2,	4130164.5,	143.3,	285.7,	1.5);	(582207.2,	4130164.5,	142.0,	285.7,	1.5);
(	582237.2,	4130164.5,	139.7,	285.7,	1.5);	(582267.2,	4130164.5,	138.4,	285.7,	1.5);

Model Output
Unit Emission Rate (1 g/s)

```
( 582297.2, 4130164.5,     137.2,     285.7,       1.5);        ( 582327.2, 4130164.5,     136.6,     285.7,       1.5);
( 582357.2, 4130164.5,     134.5,     285.7,       1.5);        ( 582387.2, 4130164.5,     133.1,     285.7,       1.5);
( 582417.2, 4130164.5,     132.1,     285.7,       1.5);        ( 582447.2, 4130164.5,     131.0,     285.7,       1.5);
( 582477.2, 4130164.5,     129.9,     285.7,       1.5);        ( 582507.2, 4130164.5,     128.9,     285.7,       1.5);
( 582567.2, 4130164.5,     126.9,     285.7,       1.5);        ( 582597.2, 4130164.5,     125.6,     285.7,       1.5);
( 582627.2, 4130164.5,     124.4,     285.7,       1.5);        ( 582657.2, 4130164.5,     123.4,     285.7,       1.5);
( 582687.2, 4130164.5,     122.7,     285.7,       1.5);        ( 582717.2, 4130164.5,     121.9,     285.7,       1.5);
( 582747.2, 4130164.5,     121.4,     285.7,       1.5);        ( 582777.2, 4130164.5,     121.0,     285.7,       1.5);
( 582807.2, 4130164.5,     120.4,     285.7,       1.5);        ( 582147.2, 4130194.5,     143.5,     285.7,       1.5);
( 582177.2, 4130194.5,     141.9,     285.7,       1.5);        ( 582207.2, 4130194.5,     140.7,     285.7,       1.5);
( 582237.2, 4130194.5,     139.2,     285.7,       1.5);        ( 582267.2, 4130194.5,     138.0,     285.7,       1.5);
( 582297.2, 4130194.5,     137.5,     285.7,       1.5);        ( 582327.2, 4130194.5,     135.8,     285.7,       1.5);
( 582357.2, 4130194.5,     134.2,     285.7,       1.5);        ( 582387.2, 4130194.5,     133.4,     285.7,       1.5);
( 582417.2, 4130194.5,     132.2,     285.7,       1.5);        ( 582447.2, 4130194.5,     131.0,     285.7,       1.5);
( 582477.2, 4130194.5,     129.7,     285.7,       1.5);        ( 582507.2, 4130194.5,     129.2,     285.7,       1.5);
( 582553.2, 4130178.2,     127.5,     285.7,       1.5);        ( 582567.2, 4130194.5,     127.1,     285.7,       1.5);
( 582597.2, 4130194.5,     126.0,     285.7,       1.5);        ( 582627.2, 4130194.5,     124.6,     285.7,       1.5);
( 582657.2, 4130194.5,     123.7,     285.7,       1.5);        ( 582687.2, 4130194.5,     123.2,     285.7,       1.5);
( 582717.2, 4130194.5,     122.3,     285.7,       1.5);        ( 582747.2, 4130194.5,     121.3,     285.7,       1.5);
( 582777.2, 4130194.5,     121.2,     285.7,       1.5);        ( 582807.2, 4130194.5,     120.4,     285.7,       1.5);
( 582147.2, 4130224.5,     143.0,     285.7,       1.5);        ( 582177.2, 4130224.5,     141.6,     285.7,       1.5);
( 582207.2, 4130224.5,     140.2,     285.7,       1.5);        ( 582237.2, 4130224.5,     138.7,     285.7,       1.5);
( 582267.2, 4130224.5,     137.8,     285.7,       1.5);        ( 582297.2, 4130224.5,     136.4,     285.7,       1.5);
( 582327.2, 4130224.5,     135.4,     285.7,       1.5);        ( 582357.2, 4130224.5,     134.1,     285.7,       1.5);
( 582387.2, 4130224.5,     133.2,     285.7,       1.5);        ( 582417.2, 4130224.5,     132.0,     285.7,       1.5);
( 582447.2, 4130224.5,     131.0,     285.7,       1.5);        ( 582477.2, 4130224.5,     129.8,     285.7,       1.5);
( 582507.2, 4130224.5,     128.8,     285.7,       1.5);        ( 582546.7, 4130223.9,     127.8,     285.7,       1.5);
( 582567.2, 4130224.5,     127.3,     285.7,       1.5);        ( 582597.2, 4130224.5,     125.9,     285.7,       1.5);
( 582627.2, 4130224.5,     124.8,     285.7,       1.5);        ( 582657.2, 4130224.5,     124.1,     285.7,       1.5);
( 582687.2, 4130224.5,     123.7,     285.7,       1.5);        ( 582717.2, 4130224.5,     122.5,     285.7,       1.5);
( 582747.2, 4130224.5,     121.6,     285.7,       1.5);        ( 582777.2, 4130224.5,     121.2,     285.7,       1.5);
( 582807.2, 4130224.5,     120.2,     285.7,       1.5);        ( 582147.2, 4130254.5,     141.5,     285.7,       1.5);
( 582177.2, 4130254.5,     140.5,     285.7,       1.5);        ( 582207.2, 4130254.5,     139.4,     285.7,       1.5);
( 582237.2, 4130254.5,     138.4,     285.7,       1.5);        ( 582267.2, 4130254.5,     137.4,     285.7,       1.5);
( 582297.2, 4130254.5,     136.4,     285.7,       1.5);        ( 582327.2, 4130254.5,     135.2,     285.7,       1.5);
( 582357.2, 4130254.5,     134.2,     285.7,       1.5);        ( 582387.2, 4130254.5,     132.9,     285.7,       1.5);
( 582417.2, 4130254.5,     132.2,     285.7,       1.5);        ( 582447.2, 4130254.5,     130.9,     285.7,       1.5);
( 582477.2, 4130254.5,     129.8,     285.7,       1.5);        ( 582507.2, 4130254.5,     129.0,     285.7,       1.5);
( 582545.5, 4130254.2,     127.5,     285.7,       1.5);        ( 582567.2, 4130254.5,     126.8,     285.7,       1.5);
( 582597.2, 4130254.5,     125.9,     285.7,       1.5);        ( 582627.2, 4130254.5,     124.8,     285.7,       1.5);
( 582657.2, 4130254.5,     123.8,     285.7,       1.5);        ( 582687.2, 4130254.5,     123.0,     285.7,       1.5);
( 582717.2, 4130254.5,     122.4,     285.7,       1.5);        ( 582747.2, 4130254.5,     121.7,     285.7,       1.5);
( 582777.2, 4130254.5,     121.2,     285.7,       1.5);        ( 582807.2, 4130254.5,     120.3,     285.7,       1.5);
( 582147.2, 4130284.5,     140.1,     285.7,       1.5);        ( 582177.2, 4130284.5,     138.8,     285.7,       1.5);
( 582207.2, 4130284.5,     138.5,     285.7,       1.5);        ( 582237.2, 4130284.5,     137.3,     285.7,       1.5);
( 582267.2, 4130284.5,     136.9,     285.7,       1.5);        ( 582297.2, 4130284.5,     135.9,     285.7,       1.5);
( 582327.2, 4130284.5,     134.7,     285.7,       1.5);        ( 582357.2, 4130284.5,     133.7,     285.7,       1.5);
( 582387.2, 4130284.5,     132.7,     285.7,       1.5);        ( 582417.2, 4130284.5,     131.6,     285.7,       1.5);
```

Model Output
Unit Emission Rate (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(	582447.2,	4130284.5,	130.5,	285.7,	1.5);	(582477.2,	4130284.5,	130.0,	285.7,	1.5);
(	582507.2,	4130284.5,	128.8,	285.7,	1.5);	(582547.3,	4130284.5,	127.3,	285.7,	1.5);
(	582567.2,	4130284.5,	126.6,	285.7,	1.5);	(582597.2,	4130284.5,	125.6,	285.7,	1.5);
(	582627.2,	4130284.5,	124.5,	285.7,	1.5);	(582657.2,	4130284.5,	123.6,	285.7,	1.5);
(	582687.2,	4130284.5,	122.8,	285.7,	1.5);	(582717.2,	4130284.5,	122.0,	285.7,	1.5);
(	582747.2,	4130284.5,	121.2,	285.7,	1.5);	(582777.2,	4130284.5,	120.7,	285.7,	1.5);
(	582807.2,	4130284.5,	120.2,	285.7,	1.5);	(582147.2,	4130314.5,	139.0,	285.7,	1.5);
(	582177.2,	4130314.5,	138.2,	285.7,	1.5);	(582207.2,	4130314.5,	137.5,	285.7,	1.5);
(	582237.2,	4130314.5,	136.8,	285.7,	1.5);	(582267.2,	4130314.5,	136.0,	285.7,	1.5);
(	582297.2,	4130314.5,	135.0,	285.7,	1.5);	(582327.2,	4130314.5,	133.9,	285.7,	1.5);
(	582357.2,	4130314.5,	133.0,	285.7,	1.5);	(582387.2,	4130314.5,	132.1,	285.7,	1.5);
(	582417.2,	4130314.5,	131.0,	285.7,	1.5);	(582447.2,	4130314.5,	130.3,	285.7,	1.5);
(	582477.2,	4130314.5,	129.1,	285.7,	1.5);	(582507.2,	4130314.5,	128.1,	285.7,	1.5);
(	582543.4,	4130314.5,	127.1,	285.7,	1.5);	(582567.2,	4130314.5,	126.3,	285.7,	1.5);
(	582597.2,	4130314.5,	125.8,	285.7,	1.5);	(582627.2,	4130314.5,	124.4,	285.7,	1.5);
(	582657.2,	4130314.5,	123.7,	285.7,	1.5);	(582687.2,	4130314.5,	123.0,	285.7,	1.5);
(	582717.2,	4130314.5,	122.5,	285.7,	1.5);	(582747.2,	4130314.5,	121.3,	285.7,	1.5);
(	582777.2,	4130314.5,	120.5,	285.7,	1.5);	(582807.2,	4130314.5,	120.1,	285.7,	1.5);
(	582147.2,	4130344.5,	137.6,	285.7,	1.5);	(582177.2,	4130344.5,	136.6,	285.7,	1.5);
(	582207.2,	4130344.5,	136.0,	285.7,	1.5);	(582237.2,	4130344.5,	136.2,	285.7,	1.5);
(	582267.2,	4130344.5,	135.8,	285.7,	1.5);	(582297.2,	4130344.5,	134.6,	285.7,	1.5);
(	582327.2,	4130344.5,	133.7,	285.7,	1.5);	(582357.2,	4130344.5,	132.8,	285.7,	1.5);
(	582387.2,	4130344.5,	131.7,	285.7,	1.5);	(582417.2,	4130344.5,	130.7,	285.7,	1.5);
(	582447.2,	4130344.5,	130.9,	285.7,	1.5);	(582477.2,	4130344.5,	128.9,	285.7,	1.5);
(	582507.2,	4130344.5,	128.3,	285.7,	1.5);	(582543.9,	4130339.3,	126.8,	285.7,	1.5);
(	582567.2,	4130344.5,	126.3,	285.7,	1.5);	(582597.2,	4130344.5,	125.7,	285.7,	1.5);
(	582627.2,	4130344.5,	124.8,	285.7,	1.5);	(582657.2,	4130344.5,	123.2,	285.7,	1.5);
(	582687.2,	4130344.5,	123.2,	285.7,	1.5);	(582717.2,	4130344.5,	121.7,	285.7,	1.5);
(	582747.2,	4130344.5,	121.1,	285.7,	1.5);	(582777.2,	4130344.5,	120.8,	285.7,	1.5);
(	582807.2,	4130344.5,	119.9,	285.7,	1.5);	(582147.2,	4130374.5,	137.2,	285.7,	1.5);
(	582177.2,	4130374.5,	135.3,	285.7,	1.5);	(582207.2,	4130374.5,	134.4,	285.7,	1.5);
(	582237.2,	4130374.5,	135.1,	285.7,	1.5);	(582267.2,	4130374.5,	134.0,	285.7,	1.5);
(	582297.2,	4130374.5,	133.5,	285.7,	1.5);	(582327.2,	4130374.5,	133.2,	285.7,	1.5);
(	582357.2,	4130374.5,	132.4,	285.7,	1.5);	(582387.2,	4130374.5,	130.9,	285.7,	1.5);
(	582417.2,	4130374.5,	130.2,	285.7,	1.5);	(582447.2,	4130374.5,	129.4,	285.7,	1.5);
(	582477.2,	4130374.5,	128.5,	285.7,	1.5);	(582507.2,	4130374.5,	128.2,	285.7,	1.5);
(	582544.1,	4130374.5,	126.2,	285.7,	1.5);	(582567.2,	4130374.5,	125.4,	285.7,	1.5);
(	582597.2,	4130374.5,	125.0,	285.7,	1.5);	(582627.2,	4130374.5,	124.2,	285.7,	1.5);
(	582657.2,	4130374.5,	123.1,	285.7,	1.5);	(582687.2,	4130374.5,	122.1,	285.7,	1.5);
(	582717.2,	4130374.5,	121.4,	285.7,	1.5);	(582747.2,	4130374.5,	120.8,	285.7,	1.5);
(	582777.2,	4130374.5,	120.4,	285.7,	1.5);	(582807.2,	4130374.5,	120.1,	285.7,	1.5);
(	582147.2,	4130404.5,	136.0,	285.7,	1.5);	(582177.2,	4130404.5,	134.3,	285.7,	1.5);

Model Output
Unit Emission Rate (1 g/s)

```
( 582207.2, 4130404.5,     133.4,     285.7,       1.5);        ( 582237.2, 4130404.5,     133.9,     285.7,       1.5);
( 582267.2, 4130404.5,     132.9,     285.7,       1.5);        ( 582297.2, 4130404.5,     132.7,     285.7,       1.5);
( 582327.2, 4130404.5,     132.0,     285.7,       1.5);        ( 582357.2, 4130404.5,     131.2,     285.7,       1.5);
( 582387.2, 4130404.5,     129.6,     285.7,       1.5);        ( 582417.2, 4130404.5,     129.0,     285.7,       1.5);
( 582447.2, 4130404.5,     128.2,     285.7,       1.5);        ( 582477.2, 4130404.5,     127.4,     285.7,       1.5);
( 582507.2, 4130404.5,     127.6,     285.7,       1.5);        ( 582544.1, 4130404.5,     125.6,     285.7,       1.5);
( 582567.2, 4130404.5,     124.8,     285.7,       1.5);        ( 582597.2, 4130404.5,     124.2,     285.7,       1.5);
( 582627.2, 4130404.5,     123.4,     285.7,       1.5);        ( 582657.2, 4130404.5,     122.3,     285.7,       1.5);
( 582687.2, 4130404.5,     121.3,     285.7,       1.5);        ( 582717.2, 4130404.5,     121.0,     285.7,       1.5);
( 582747.2, 4130404.5,     120.5,     285.7,       1.5);        ( 582777.2, 4130404.5,     120.3,     285.7,       1.5);
( 582807.2, 4130404.5,     119.9,     285.7,       1.5);
```

Model Output
Unit Emission Rate (1 g/s)

*** 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
```

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,

Model Output
Unit Emission Rate (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

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

Surface file: ..\met data\745090.SFC Met Version: 14134
Profile file: ..\met data\745090.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 23244 Upper air station no.: 23230
Name: UNKNOWN Name: OAKLAND/WSO_AP
Year: 2009 Year: 2009

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
09	01	01	1	01	-12.1	0.213	-9.000	-9.000	-999.	236.	72.6	0.09	0.54	1.00	2.86	1.	10.0	282.5	2.0
09	01	01	1	02	-14.9	0.261	-9.000	-9.000	-999.	321.	109.2	0.09	0.54	1.00	3.36	18.	10.0	282.0	2.0
09	01	01	1	03	-9.1	0.160	-9.000	-9.000	-999.	158.	40.7	0.09	0.54	1.00	2.36	24.	10.0	282.0	2.0
09	01	01	1	04	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.24	0.54	1.00	0.00	0.	10.0	281.4	2.0
09	01	01	1	05	-3.9	0.075	-9.000	-9.000	-999.	49.	9.8	0.09	0.54	1.00	1.76	23.	10.0	281.4	2.0
09	01	01	1	06	-9.1	0.159	-9.000	-9.000	-999.	153.	40.5	0.09	0.54	1.00	2.36	2.	10.0	280.9	2.0
09	01	01	1	07	-9.1	0.159	-9.000	-9.000	-999.	153.	40.5	0.09	0.54	1.00	2.36	15.	10.0	280.9	2.0
09	01	01	1	08	-4.7	0.084	-9.000	-9.000	-999.	61.	11.7	0.15	0.54	0.73	1.76	323.	10.0	280.9	2.0
09	01	01	1	09	-4.9	0.212	-9.000	-9.000	-999.	234.	179.0	0.15	0.54	0.38	2.36	357.	10.0	280.4	2.0
09	01	01	1	10	5.7	0.163	0.241	0.014	89.	159.	-69.3	0.09	0.54	0.25	1.76	11.	10.0	280.9	2.0
09	01	01	1	11	12.2	-9.000	-9.000	-9.000	158.	-999.	-99999.0	0.24	0.54	0.21	0.00	0.	10.0	280.9	2.0
09	01	01	1	12	16.0	0.426	0.456	0.016	216.	668.	-442.4	0.15	0.54	0.19	4.36	346.	10.0	281.4	2.0
09	01	01	1	13	16.6	0.236	0.493	0.015	263.	305.	-71.8	0.36	0.54	0.19	1.76	253.	10.0	281.4	2.0
09	01	01	1	14	14.2	-9.000	-9.000	-9.000	297.	-999.	-99999.0	0.24	0.54	0.20	0.00	0.	10.0	282.0	2.0
09	01	01	1	15	44.9	-9.000	-9.000	-9.000	387.	-999.	-99999.0	0.24	0.54	0.23	0.00	0.	10.0	283.8	2.0
09	01	01	1	16	13.2	-9.000	-9.000	-9.000	410.	-999.	-99999.0	0.24	0.54	0.31	0.00	0.	10.0	284.1	2.0
09	01	01	1	17	-12.3	0.130	-9.000	-9.000	-999.	112.	16.2	0.15	0.54	0.55	2.36	351.	10.0	282.1	2.0
09	01	01	1	18	-9.3	0.106	-9.000	-9.000	-999.	83.	11.6	0.36	0.54	1.00	1.76	297.	10.0	282.1	2.0
09	01	01	1	19	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.24	0.54	1.00	0.00	0.	10.0	281.1	2.0
09	01	01	1	20	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.24	0.54	1.00	0.00	0.	10.0	281.1	2.0
09	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.24	0.54	1.00	0.00	0.	10.0	281.1	2.0
09	01	01	1	22	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.24	0.54	1.00	0.00	0.	10.0	281.1	2.0
09	01	01	1	23	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.24	0.54	1.00	0.00	0.	10.0	281.1	2.0
09	01	01	1	24	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.24	0.54	1.00	0.00	0.	10.0	280.1	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	1.	2.86	282.6	99.0	-99.00	-99.00

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

Model Output
Unit Emission Rate (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE PERIOD (43872 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: HAUL ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
582267.23	4129774.47	0.10761	582297.23	4129774.47	0.13900
582327.23	4129774.47	0.18298	582357.23	4129774.47	0.24310
582387.23	4129774.47	0.33149	582417.23	4129774.47	0.45634
582447.23	4129774.47	0.62943	582477.23	4129774.47	0.87006
582507.23	4129774.47	1.13100	582537.23	4129774.47	1.39751
582567.23	4129774.47	1.57073	582597.23	4129774.47	1.62071
582627.23	4129774.47	1.55719	582657.23	4129774.47	1.40662
582687.23	4129774.47	1.24099	582717.23	4129774.47	1.06727
582747.23	4129774.47	0.90214	582237.23	4129804.47	0.08742
582267.23	4129804.47	0.11005	582297.23	4129804.47	0.14126
582327.23	4129804.47	0.18722	582357.23	4129804.47	0.25130
582387.23	4129804.47	0.34001	582417.23	4129804.47	0.49253
582447.23	4129804.47	0.70743	582477.23	4129804.47	1.01613
582507.23	4129804.47	1.36342	582537.23	4129804.47	1.68493
582567.23	4129804.47	1.89297	582597.23	4129804.47	1.91259
582627.23	4129804.47	1.78614	582657.23	4129804.47	1.57377
582687.23	4129804.47	1.35495	582717.23	4129804.47	1.13986
582237.23	4129834.47	0.08798	582267.23	4129834.47	0.11158
582297.23	4129834.47	0.14328	582327.23	4129834.47	0.18656
582357.23	4129834.47	0.24894	582387.23	4129834.47	0.34404
582417.23	4129834.47	0.53312	582447.23	4129834.47	0.78347
582477.23	4129834.47	1.21858	582507.23	4129834.47	1.69268
582537.23	4129834.47	2.11405	582567.23	4129834.47	2.32784
582597.23	4129834.47	2.26890	582627.23	4129834.47	2.03498
582657.23	4129834.47	1.75723	582687.23	4129834.47	1.47067
582717.23	4129834.47	1.20855	582207.23	4129864.47	0.07264
582237.23	4129864.47	0.08996	582267.23	4129864.47	0.11307
582297.23	4129864.47	0.14538	582327.23	4129864.47	0.18729
582357.23	4129864.47	0.25504	582387.23	4129864.47	0.36252
582417.23	4129864.47	0.59986	582447.23	4129864.47	0.93736
582477.23	4129864.47	1.49703	582507.23	4129864.47	2.17371
582537.23	4129864.47	2.72454	582567.23	4129864.47	2.89794
582597.23	4129864.47	2.71250	582627.23	4129864.47	2.34214
582657.23	4129864.47	1.95157	582687.23	4129864.47	1.58351

Model Output
Unit Emission Rate (1 g/s)

582717.23	4129864.47	1.26756	582177.23	4129894.47	0.06034
582207.23	4129894.47	0.07463	582237.23	4129894.47	0.09249
582267.23	4129894.47	0.11689	582297.23	4129894.47	0.15131
582327.23	4129894.47	0.19754	582357.23	4129894.47	0.27233
582387.23	4129894.47	0.41644	582417.23	4129894.47	0.68860
582447.23	4129894.47	1.14538	582477.23	4129894.47	1.93842

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE PERIOD (43872 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: HAUL ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
582507.23	4129894.47	2.90890	582537.23	4129894.47	3.60995
582567.23	4129894.47	3.64124	582597.23	4129894.47	3.23201
582627.23	4129894.47	2.68346	582657.23	4129894.47	2.14707
582687.23	4129894.47	1.68883	582717.23	4129894.47	1.32159
582147.23	4129924.47	0.05378	582177.23	4129924.47	0.06321
582207.23	4129924.47	0.07580	582237.23	4129924.47	0.09463
582267.23	4129924.47	0.12124	582297.23	4129924.47	0.16310
582327.23	4129924.47	0.22944	582357.23	4129924.47	0.33195
582387.23	4129924.47	0.50662	582417.23	4129924.47	0.86463
582447.23	4129924.47	1.44141	582477.23	4129924.47	2.50565
582507.23	4129924.47	4.05020	582537.23	4129924.47	4.92266
582567.23	4129924.47	4.68586	582597.23	4129924.47	3.88571
582627.23	4129924.47	3.03781	582657.23	4129924.47	2.32950
582687.23	4129924.47	1.78005	582717.23	4129924.47	1.36129
582747.23	4129924.47	1.03853	582147.23	4129954.47	0.05661
582177.23	4129954.47	0.06819	582207.23	4129954.47	0.07919
582237.23	4129954.47	0.09689	582267.23	4129954.47	0.12696
582297.23	4129954.47	0.17785	582327.23	4129954.47	0.25944
582357.23	4129954.47	0.38089	582387.23	4129954.47	0.58648
582417.23	4129954.47	0.95625	582447.23	4129954.47	1.69655
582477.23	4129954.47	3.25254	582507.23	4129954.47	6.17056
582537.23	4129954.47	7.33871	582567.23	4129954.47	6.16788
582597.23	4129954.47	4.62153	582627.23	4129954.47	3.39415
582657.23	4129954.47	2.49818	582687.23	4129954.47	1.85560
582717.23	4129954.47	1.38904	582747.23	4129954.47	1.04896
582777.23	4129954.47	0.78861	582147.23	4129984.47	0.05744
582177.23	4129984.47	0.07197	582207.23	4129984.47	0.08745

Model Output
Unit Emission Rate (1 g/s)

582237.23	4129984.47	0.10754	582267.23	4129984.47	0.13732
582297.23	4129984.47	0.19663	582327.23	4129984.47	0.28748
582357.23	4129984.47	0.41634	582387.23	4129984.47	0.63594
582417.23	4129984.47	1.01201	582447.23	4129984.47	1.90460
582477.23	4129984.47	4.10187	582537.23	4129984.47	11.87330
582567.23	4129984.47	7.98139	582597.23	4129984.47	5.35891
582627.23	4129984.47	3.70973	582657.23	4129984.47	2.63025
582687.23	4129984.47	1.90496	582717.23	4129984.47	1.40763
582747.23	4129984.47	1.05682	582777.23	4129984.47	0.78522
582807.23	4129984.47	0.59942	582147.23	4130014.47	0.05724
582177.23	4130014.47	0.07398	582207.23	4130014.47	0.09439
582237.23	4130014.47	0.11914	582267.23	4130014.47	0.15632
582297.23	4130014.47	0.20592	582327.23	4130014.47	0.30102

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE PERIOD (43872 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: HAUL ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
582357.23	4130014.47	0.44369	582387.23	4130014.47	0.67081
582417.23	4130014.47	1.09795	582447.23	4130014.47	2.12013
582480.29	**4130004.67**	**5.14479 MER Location**	582537.23	4130014.47	18.37632
582567.23	4130014.47	9.85232	582597.23	4130014.47	6.04192
582627.23	4130014.47	3.96982	582657.23	4130014.47	2.73148
582687.23	4130014.47	1.93974	582717.23	4130014.47	1.41247
582747.23	4130014.47	1.04979	582777.23	4130014.47	0.78682
582807.23	4130014.47	0.59401	582147.23	4130044.47	0.05966
582177.23	4130044.47	0.07392	582207.23	4130044.47	0.09765
582237.23	4130044.47	0.12858	582267.23	4130044.47	0.16650
582297.23	4130044.47	0.22647	582327.23	4130044.47	0.32004
582357.23	4130044.47	0.47428	582387.23	4130044.47	0.73511
582417.23	4130044.47	1.22518	582447.23	4130044.47	2.43026
582537.23	4130044.47	25.14350	582567.23	4130044.47	11.93563
582597.23	4130044.47	6.70730	582627.23	4130044.47	4.19466
582657.23	4130044.47	2.80150	582687.23	4130044.47	1.95223
582717.23	4130044.47	1.40288	582747.23	4130044.47	1.03374
582777.23	4130044.47	0.77968	582807.23	4130044.47	0.59755
582147.23	4130074.47	0.06364	582177.23	4130074.47	0.07930
582207.23	4130074.47	0.10300	582237.23	4130074.47	0.13811

Model Output
Unit Emission Rate (1 g/s)

582267.23	4130074.47	0.18558	582297.23	4130074.47	0.24884
582327.23	4130074.47	0.35054	582357.23	4130074.47	0.52556
582387.23	4130074.47	0.82196	582417.23	4130074.47	1.40600
582447.23	4130074.47	2.77350	582537.23	4130074.47	32.90133
582567.23	4130074.47	13.82681	582597.23	4130074.47	7.16406
582627.23	4130074.47	4.31664	582657.23	4130074.47	2.82086
582687.23	4130074.47	1.93356	582717.23	4130074.47	1.37439
582747.23	4130074.47	1.00631	582777.23	4130074.47	0.75730
582807.23	4130074.47	0.58336	582147.23	4130104.47	0.07076
582177.23	4130104.47	0.09028	582207.23	4130104.47	0.11567
582237.23	4130104.47	0.15835	582267.23	4130104.47	0.21027
582297.23	4130104.47	0.28065	582327.23	4130104.47	0.40210
582357.23	4130104.47	0.59514	582387.23	4130104.47	0.92960
582417.23	4130104.47	1.55772	582447.23	4130104.47	2.95445
582567.23	4130104.47	14.86998	582597.23	4130104.47	7.34085
582627.23	4130104.47	4.34510	582657.23	4130104.47	2.79215
582687.23	4130104.47	1.89452	582717.23	4130104.47	1.33309
582747.23	4130104.47	0.97018	582777.23	4130104.47	0.72767
582807.23	4130104.47	0.56072	582147.23	4130134.47	0.08020
582177.23	4130134.47	0.10697	582207.23	4130134.47	0.13807

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE PERIOD (43872 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: HAUL ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
582237.23	4130134.47	0.18256	582267.23	4130134.47	0.24034
582297.23	4130134.47	0.32299	582327.23	4130134.47	0.45732
582357.23	4130134.47	0.66558	582387.23	4130134.47	1.02631
582417.23	4130134.47	1.65544	582447.23	4130134.47	2.98825
582476.79	4130149.05	5.64203	582507.08	4130144.48	14.23554
582567.23	4130134.47	15.06401	582597.23	4130134.47	7.36989
582627.23	4130134.47	4.28632	582657.23	4130134.47	2.72069
582687.23	4130134.47	1.82388	582717.23	4130134.47	1.27397
582747.23	4130134.47	0.92384	582777.23	4130134.47	0.69322
582807.23	4130134.47	0.53538	582147.23	4130164.47	0.09878
582177.23	4130164.47	0.12697	582207.23	4130164.47	0.15854
582237.23	4130164.47	0.20659	582267.23	4130164.47	0.26980
582297.23	4130164.47	0.36229	582327.23	4130164.47	0.49416

Model Output
Unit Emission Rate (1 g/s)

582357.23	4130164.47	0.72755	582387.23	4130164.47	1.09599
582417.23	4130164.47	1.71517	582447.23	4130164.47	2.97046
582477.23	4130164.47	5.65082	582507.23	4130164.47	14.63437
582567.23	4130164.47	14.89537	582597.23	4130164.47	7.22550
582627.23	4130164.47	4.15231	582657.23	4130164.47	2.60335
582687.23	4130164.47	1.72824	582717.23	4130164.47	1.20094
582747.23	4130164.47	0.87012	582777.23	4130164.47	0.65416
582807.23	4130164.47	0.50726	582147.23	4130194.47	0.11537
582177.23	4130194.47	0.14251	582207.23	4130194.47	0.17786
582237.23	4130194.47	0.22791	582267.23	4130194.47	0.29683
582297.23	4130194.47	0.39001	582327.23	4130194.47	0.54090
582357.23	4130194.47	0.77335	582387.23	4130194.47	1.12361
582417.23	4130194.47	1.73514	582447.23	4130194.47	2.94616
582477.23	4130194.47	5.69140	582507.23	4130194.47	14.61295
582553.15	4130178.24	22.82228	582567.23	4130194.47	14.57338
582597.23	4130194.47	7.00388	582627.23	4130194.47	3.95709
582657.23	4130194.47	2.44969	582687.23	4130194.47	1.61433
582717.23	4130194.47	1.11809	582747.23	4130194.47	0.81049
582777.23	4130194.47	0.61284	582807.23	4130194.47	0.47752
582147.23	4130224.47	0.12685	582177.23	4130224.47	0.15634
582207.23	4130224.47	0.19592	582237.23	4130224.47	0.25053
582267.23	4130224.47	0.32221	582297.23	4130224.47	0.42840
582327.23	4130224.47	0.57835	582357.23	4130224.47	0.80610
582387.23	4130224.47	1.15045	582417.23	4130224.47	1.74436
582447.23	4130224.47	2.89818	582477.23	4130224.47	5.62274
582507.23	4130224.47	15.01718	582546.72	4130223.86	27.73896
582567.23	4130224.47	14.06297	582597.23	4130224.47	6.66255

Model Output
Unit Emission Rate (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE PERIOD (43872 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: HAUL ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
582627.23	4130224.47	3.70279	582657.23	4130224.47	2.26182
582687.23	4130224.47	1.48197	582717.23	4130224.47	1.02659
582747.23	4130224.47	0.74807	582777.23	4130224.47	0.56915
582807.23	4130224.47	0.44647	582147.23	4130254.47	0.14199
582177.23	4130254.47	0.17357	582207.23	4130254.47	0.21586
582237.23	4130254.47	0.27217	582267.23	4130254.47	0.34880
582297.23	4130254.47	0.45442	582327.23	4130254.47	0.60636
582357.23	4130254.47	0.82389	582387.23	4130254.47	1.16715
582417.23	4130254.47	1.71954	582447.23	4130254.47	2.83207
582477.23	4130254.47	5.49478	582507.23	4130254.47	14.77749
582545.50	4130254.16	28.31489	582567.23	4130254.47	13.54719
582597.23	4130254.47	6.24055	582627.23	4130254.47	3.38480
582657.23	4130254.47	2.03909	582687.23	4130254.47	1.33129
582717.23	4130254.47	0.92949	582747.23	4130254.47	0.68411
582777.23	4130254.47	0.52514	582807.23	4130254.47	0.41572
582147.23	4130284.47	0.15790	582177.23	4130284.47	0.19362
582207.23	4130284.47	0.23650	582237.23	4130284.47	0.29712
582267.23	4130284.47	0.37311	582297.23	4130284.47	0.48040
582327.23	4130284.47	0.63007	582357.23	4130284.47	0.84246
582387.23	4130284.47	1.16463	582417.23	4130284.47	1.69209
582447.23	4130284.47	2.75754	582477.23	4130284.47	5.24637
582507.23	4130284.47	14.67568	582547.33	4130284.47	25.27699
582567.23	4130284.47	12.79387	582597.23	4130284.47	5.67807
582627.23	4130284.47	3.00591	582657.23	4130284.47	1.79557
582687.23	4130284.47	1.17842	582717.23	4130284.47	0.83129
582747.23	4130284.47	0.61942	582777.23	4130284.47	0.48085
582807.23	4130284.47	0.38494	582147.23	4130314.47	0.17307
582177.23	4130314.47	0.20974	582207.23	4130314.47	0.25657
582237.23	4130314.47	0.31704	582267.23	4130314.47	0.39704
582297.23	4130314.47	0.50440	582327.23	4130314.47	0.65179
582357.23	4130314.47	0.85683	582387.23	4130314.47	1.16480
582417.23	4130314.47	1.64763	582447.23	4130314.47	2.63227
582477.23	4130314.47	5.17197	582507.23	4130314.47	14.76503
582543.43	4130314.47	28.12789	582567.23	4130314.47	11.73892

582597.23	4130314.47	4.98338	582627.23	4130314.47	2.58243
582657.23	4130314.47	1.54714	582687.23	4130314.47	1.03087
582717.23	4130314.47	0.74065	582747.23	4130314.47	0.55886
582777.23	4130314.47	0.43879	582807.23	4130314.47	0.35482
582147.23	4130344.47	0.18883	582177.23	4130344.47	0.22853
582207.23	4130344.47	0.27689	582237.23	4130344.47	0.33469

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

*** THE PERIOD (43872 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: HAUL ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
582267.23	4130344.47	0.41229	582297.23	4130344.47	0.51918
582327.23	4130344.47	0.65929	582357.23	4130344.47	0.85515
582387.23	4130344.47	1.13541	582417.23	4130344.47	1.57971
582447.23	4130344.47	2.40200	582477.23	4130344.47	4.80060
582507.23	4130344.47	13.69921	582543.89	4130339.34	26.07207
582567.23	4130344.47	10.18538	582597.23	4130344.47	4.12278
582627.23	4130344.47	2.13822	582657.23	4130344.47	1.30238
582687.23	4130344.47	0.89288	582717.23	4130344.47	0.65194
582747.23	4130344.47	0.50146	582777.23	4130344.47	0.39931
582807.23	4130344.47	0.32556	582147.23	4130374.47	0.20103
582177.23	4130374.47	0.24443	582207.23	4130374.47	0.29503
582237.23	4130374.47	0.35175	582267.23	4130374.47	0.43233
582297.23	4130374.47	0.53261	582327.23	4130374.47	0.66331
582357.23	4130374.47	0.84709	582387.23	4130374.47	1.08489
582417.23	4130374.47	1.52127	582447.23	4130374.47	2.36606
582477.23	4130374.47	4.38528	582507.23	4130374.47	12.43508
582544.12	4130374.47	22.35354	582567.23	4130374.47	8.23700
582597.23	4130374.47	3.19816	582627.23	4130374.47	1.70598
582657.23	4130374.47	1.08483	582687.23	4130374.47	0.76318
582717.23	4130374.47	0.57198	582747.23	4130374.47	0.44713
582777.23	4130374.47	0.36045	582807.23	4130374.47	0.29750
582147.23	4130404.47	0.21400	582177.23	4130404.47	0.25696
582207.23	4130404.47	0.30726	582237.23	4130404.47	0.36471
582267.23	4130404.47	0.44249	582297.23	4130404.47	0.53732
582327.23	4130404.47	0.66414	582357.23	4130404.47	0.80612
582387.23	4130404.47	1.06662	582417.23	4130404.47	1.48165

Model Output
Unit Emission Rate (1 g/s)

582447.23	4130404.47	2.22740	582477.23	4130404.47	3.96398
582507.23	4130404.47	10.49949	582544.12	4130404.47	16.76042
582567.23	4130404.47	5.57150	582597.23	4130404.47	2.31461
582627.23	4130404.47	1.33477	582657.23	4130404.47	0.89207
582687.23	4130404.47	0.64810	582717.23	4130404.47	0.49764
582747.23	4130404.47	0.39565	582777.23	4130404.47	0.32336
582807.23	4130404.47	0.26960			

Model Output
Unit Emission Rate (1 g/s)

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 *** AERMOD - VERSION  18081 ***   *** Canyon Crossing, Construction HRA                                ***        09/13/19
 *** AERMET - VERSION  14134 ***   *** Cupertino, CA                                                    ***        10:51:08
                                                                                                                   PAGE  62
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  URBAN

                                       *** THE SUMMARY OF MAXIMUM PERIOD ( 43872 HRS) RESULTS ***

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

                                                                                                         NETWORK
GROUP ID                      AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

HAUL      1ST HIGHEST VALUE IS      32.90133 AT (  582537.23,  4130074.47,   127.11,   285.68,    1.50)  DC
          2ND HIGHEST VALUE IS      28.31489 AT (  582545.50,  4130254.16,   127.52,   285.68,    1.50)  DC
          3RD HIGHEST VALUE IS      28.12789 AT (  582543.43,  4130314.47,   127.15,   285.68,    1.50)  DC
          4TH HIGHEST VALUE IS      27.73896 AT (  582546.72,  4130223.86,   127.82,   285.68,    1.50)  DC
          5TH HIGHEST VALUE IS      26.07207 AT (  582543.89,  4130339.34,   126.81,   285.68,    1.50)  DC
          6TH HIGHEST VALUE IS      25.27699 AT (  582547.33,  4130284.47,   127.30,   285.68,    1.50)  DC
          7TH HIGHEST VALUE IS      25.14350 AT (  582537.23,  4130044.47,   126.47,   285.68,    1.50)  DC
          8TH HIGHEST VALUE IS      22.82228 AT (  582553.15,  4130178.24,   127.49,   285.68,    1.50)  DC
          9TH HIGHEST VALUE IS      22.35354 AT (  582544.12,  4130374.47,   126.19,   285.68,    1.50)  DC
         10TH HIGHEST VALUE IS      18.37632 AT (  582537.23,  4130014.47,   125.80,   285.68,    1.50)  DC

ONSITE    1ST HIGHEST VALUE IS      64.92184 AT (  582480.29,  4130004.67,   128.05,   285.68,    1.50)  DC
          2ND HIGHEST VALUE IS      36.38912 AT (  582477.23,  4129984.47,   128.12,   285.68,    1.50)  DC
          3RD HIGHEST VALUE IS      27.51444 AT (  582537.23,  4130044.47,   126.47,   285.68,    1.50)  DC
          4TH HIGHEST VALUE IS      26.31461 AT (  582537.23,  4130014.47,   125.80,   285.68,    1.50)  DC
          5TH HIGHEST VALUE IS      24.22111 AT (  582537.23,  4130074.47,   127.11,   285.68,    1.50)  DC
          6TH HIGHEST VALUE IS      23.15478 AT (  582507.23,  4129954.47,   127.31,   285.68,    1.50)  DC
          7TH HIGHEST VALUE IS      22.86884 AT (  582537.23,  4129984.47,   125.87,   285.68,    1.50)  DC
          8TH HIGHEST VALUE IS      18.97543 AT (  582477.23,  4129954.47,   128.20,   285.68,    1.50)  DC
          9TH HIGHEST VALUE IS      17.40118 AT (  582537.23,  4129954.47,   125.84,   285.68,    1.50)  DC
         10TH HIGHEST VALUE IS      14.33754 AT (  582507.23,  4129924.47,   128.06,   285.68,    1.50)  DC

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

MER Location

Model Output
Unit Emission Rate (1 g/s)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL URBAN

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

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

A Total of   0 Fatal Error Message(s)
A Total of   0 Warning Message(s)
A Total of   15496 Informational Message(s)

A Total of   43872 Hours Were Processed

A Total of   14061 Calm Hours Identified

A Total of   1435 Missing Hours Identified (3.27 Percent)

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

   ********   WARNING MESSAGES   ********
              *** NONE ***

   ****
   *** AERMOD Finishes Successfully ***
   ****

Appendix C. Construction Risk Calculations

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Table C1
Residential MER Concentrations for Risk Calculations

Contaminant	Source		Model Output [1] ($\mu g/m^3$)	Emission Rates [2] (g/s)	MER Conc. ($\mu g/m^3$)	Total MER Conc. Annual Average ($\mu g/m^3$)
(a)	(b)		(c)	(d)	(e)	(f)
Residential Receptors - Unmitigated						
DPM	2020	On-Site Emissions	64.92	1.11E-02	7.19E-01	7.19E-01
		Truck Route	5.14	5.50E-06	2.83E-05	
	2021	On-Site Emissions	64.92	9.93E-03	6.45E-01	6.45E-01
		Truck Route	5.14	8.93E-07	4.60E-06	
			Total DPM concentrations used for Cancer Risk and Chronic Hazard calculations			
$PM_{2.5}$	2020	On-Site Emissions	64.92	1.04E-02	6.76E-01	6.76E-01
		Truck Route	5.14	5.32E-06	2.74E-05	
	2021	On-Site Emissions	64.92	9.47E-03	6.15E-01	6.15E-01
		Truck Route	5.14	8.19E-07	4.21E-06	
				Maximum Annual $PM_{2.5}$ Concentration		**0.68**
Residential Receptors - Mitigated Run: Tier 4 Interim Engines for eq. > 50 HP						
DPM	2020	On-Site Emissions	64.92	1.34E-03	8.68E-02	8.69E-02
		Truck Route	5.14	5.50E-06	2.83E-05	
	2021	On-Site Emissions	64.92	1.44E-03	9.37E-02	9.37E-02
		Truck Route	5.14	8.93E-07	4.60E-06	
			Total DPM concentrations used for Cancer Risk and Chronic Hazard calculations			
$PM_{2.5}$	2020	On-Site Emissions	64.92	1.34E-03	8.68E-02	8.69E-02
		Truck Route	5.14	5.32E-06	2.74E-05	
	2021	On-Site Emissions	64.92	1.44E-03	9.37E-02	9.37E-02
		Truck Route	5.14	8.19E-07	4.21E-06	
				Maximum Annual $PM_{2.5}$ Concentration		**0.09**

Maximum Exposed Receptor (MER) UTM coordinates: 582480.29E, 4130004.67N

[1] Model Output at the MER based on unit emission rates for sources (1 g/s).

[2] Emission Rates from Emission Rate Calculations (Appendix A - Construction Emissions).

Table C2
Quantification of Health Risks for Off-site Residents

Source		MER	Weight	Contaminant			Dose (by age bin)		Carcinogenic Risks (by age bin)		**Total Cancer Risk**	**Chronic Hazards [3]**	
		Conc.	Fraction		URF	CPF	3rd Trimester	0 < 2 years	3rd Trimester	0 < 2 years		Chronic REL	RESP
		($\mu g/m^3$)			$(\mu g/m^3)^{-1}$	$(mg/kg/day)^{-1}$	(mg/kg-day)	(mg/kg-day)	per million	per million	per million	($\mu g/m^3$)	
(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(k)	(l)	(o)	(p)	(q)
Residential Receptors - Unmitigated													
2020	On & Off-Site	7.19E-01	1.00E+00	DPM	3.0E-04	1.1E+00	2.49E-04	7.51E-04	7.9	32.4	40.3	5.0E+00	1.44E-01
2021	On & Off-Site	6.45E-01	1.00E+00		3.0E-04	1.1E+00		6.74E-04		18.1	18.1	5.0E+00	1.29E-01
											58.4		**0.273**
Residential Receptors - Mitigated Run: Tier 4 Interim Engines for eq. > 50 HP													
2020	On & Off-Site	8.69E-02	1.00E+00	DPM	3.0E-04	1.1E+00	3.01E-05	9.08E-05	1.0	3.9	4.9	5.0E+00	1.74E-02
2021	On & Off-Site	9.37E-02	1.00E+00		3.0E-04	1.1E+00		9.79E-05		2.6	2.6	5.0E+00	1.87E-02
											7.5		**0.036**

Maximum Exposed Receptor (MER) UTM coordinates: 582480.29E, 4130004.67N

		3rd Trimester	0 < 2 years
OEHHA age bin			
exposure year(s)		2020	2020-2021
Dose Exposure Factors:	xposure frequency (days/year)	350	350
	inhalation rate (L/kg-day) [1]	361	1090
	inhalation absorption factor	1	1
	conversion factor (mg/µg; m^3/L)	1.0E-06	1.0E-06
Risk Calculation Factors:	age sensitivity factor	10	10
	averaging time (years)	70	70
	per million	1.0E+06	1.0E+06
	fraction of time at home	0.85	0.85

exposure durations per age bin			exposure durations (year)	
	Construction Year	Risk Scalar [2]	3rd Trimester	0 < 2 years
	2020	0.59	0.25	0.34
	2021	0.21		0.21
	Total	0.80	0.25	0.55

[1] Inhalation rate taken as the 95th percentile breathing rates (OEHHA, 2015).

[2] Risk scalar determined for each year of construction to adjust receptor exposures to the exposure durations for each construction year (see App A - Construction Emissions).

[3] Chronic Hazards for DPM using the chronic reference exposure level (REL) for the Respiratory Toxicological Endpoint.