APPENDIX G

HEALTH RISK ASSESSMENT

Appendix G1:
Construction HRA

Construction Health Risk Assessment | September 2014

The Homes at Deer Hill (Terraces of Lafayette Project Alternative)

for the City of Lafayette

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1. Introduction

In March 2011, the City of Lafayette (City) submitted an application for the Terraces of Lafayette Project, which included 14 apartment buildings providing 315 moderate-income apartments on the Project site. An EIR was prepared according to the CEQA (SCH #2011072055) and sent to the State Clearinghouse on May 8, 2012. A Final EIR, including responses to comments on the Terraces of Lafayette Draft EIR, was published on November 19, 2012. The Final EIR for the Terraces of Lafayette Project identified 13 significant and unavoidable impacts, including one in the resource category of air quality.

As the Terraces of Lafayette Project moved into public hearings in 2013, the City Council directed City staff to participate in conversations with the Project applicant to determine if there was an alternative plan that would be acceptable to all parties, including the Project developer, community members, and the City. The Terraces of Lafayette EIR was certified on August 12, 2013. The Draft and Final EIRs for the Terraces of Lafayette Project are together referred to as the "Certified Project." On December 9, 2013 City of Lafayette staff presented the Homes at Deer Hill Project, an alternative to the Terraces of Lafayette Project, to the City Council. In January 2014, the Project developer and City Council entered into an agreement under which the Homes at Deer Hill Project (Revised Project) would be reviewed by the City, including review by the Parks, Trails, and Recreation Commission, Circulation Commission, Design Review Commission, and Planning Commission, with final review and action by the City Council.

The Certified Project site is located on an approximately 22.27-acre parcel at 3233 Deer Hill Road in east central Lafayette, south of Deer Hill Road, west of Pleasant Hill Road, and north of State Highway 24. The Revised Project would redevelop the 22.27-acre site with 44 single-family detached homes and a community park. As part of the Revised Project, a dog park would be created on an approximately 3-acre parcel on the north side of Deer Hill Road across from the Project site. The Project site is located in the City of Lafayette, Contra Costa County, California.

The latest version of the BAAQMD CEQA Air Quality Guidelines requires projects to evaluate the impacts of construction activities on sensitive receptors (BAAQMD, 2012). Construction of the Revised Project would take place starting in May 2015 and will include demolition, rough grading, pad finish, fine grading/base rock, building construction, paving, and architectural coating (painting). The construction phase is estimated to take place over a period of 913 calendar days (652 work days) beginning in May 2015 and ending in October 2017.

The nearest off-site sensitive receptor to the Project is a single family residence located immediately west of the dog park site (within 20 to 50 feet of portions of the Project). Additionally, a larger single-family residential community is located approximately 180 feet east of the site, across Pleasant Hill Road. The residents at all of these locations could be potentially impacted from the proposed construction activities.

1. Introduction

The BAAQMD has developed Screening Tables for Air Toxics Evaluation During Construction (2010) that evaluate construction-related health risks associated with residential, commercial, and industrial projects. According to the screening tables, the residences are much closer than the distance of 125 meters (410 feet) that would screen out potential health risks. Therefore, a site-specific construction health risk assessment (HRA) was prepared for the Revised Project.

This construction HRA considers the health impact of planned construction operations at the Project site to off-site sensitive receptors (adults and children in the nearby residences) from diesel equipment exhaust and particulate matter ($PM_{2.5}$).

2. Project Description

The Terraces of Lafayette Project site is located on an approximately 22.27-acre parcel at 3233 Deer Hill Road in the City of Lafayette, Contra Costa County, California. As part of the Revised Project, a dog park would be created on an approximately 3-acre parcel on the north side of Deer Hill Road across from the Certified Project site. The Certified Project site and dog park site are together referred to as the Revised Project site. Construction of the Revised Project is anticipated to begin in May 2015 and be completed in October 2017.

The Certified Project site is located at the southwest corner of the Deer Hill Road/Pleasant Hill Road intersection and is bound by Pleasant Hill Road to the east, Highway 24 to the south and Deer Hill Road to the west and north. The dog park site is bounded by Pleasant Hill Road to the south and is adjacent to a residential property to the west and open space to the north and east. Existing land uses to the east across Pleasant Hill Road include a gas station, single-family residences, and Acalanes High School. West and north of the project site across Deer Hill Road are two residences and a Sienna Ranch which features outdoor classes and summer camp for children. To the south across State Highway 24 are multi-family residences, office and commercial land uses. Briones Regional Park is located approximately 500 feet north of the Deer Hill Road/Pleasant Hills Road intersection and north of the park is Springhill Elementary School.

The Revised Project site and site vicinity are depicted in Figure 1.

2. Project Description

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PLACEWORKS

Date: September 2014

Source: PlaceWorks, 2014; Google Earth, 2014.

Figure 1

Project Location and ISCST3 Model Configuration

2. Project Description

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3. Methodology and Significance Thresholds

The purpose of the construction HRA is to evaluate the potential health impacts from diesel particulate matter (DPM) and particulate matter less than 2.5 microns ($PM_{2.5}$) emitted during construction activities associated with the Revised Project. Construction sources evaluated in this HRA include off-road construction equipment, such as excavators, graders, scrapers, forklifts, pavers, rollers, dozers, loaders, backhoes, cranes, generator sets, welding equipment, concrete saws, air compressors, and water trucks.

The BAAQMD's 2010 adopted "Thresholds of Significance" for local community risk impacts were challenged in a lawsuit and subsequently rescinded. However, lead agencies can determine that these are appropriate air quality thresholds for projects they review. The 2010 BAAQMD thresholds that were used for this project are shown below:

- Non-compliance with a qualified risk reduction plan
- 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 $\mu g/m^3$

Since both the City of Lafayette and Contra Costa County do not currently have qualified risk reduction plans, a site-specific analysis of DPM and $PM_{2.5}$ impacts on sensitive receptors was conducted.

The methodology used in this HRA is consistent with the following BAAQMD and the Office of Environmental Health Hazard Assessment (OEHHA) guidance documents:

- BAAQMD, 2012. California Environmental Quality Act Air Quality Guidelines. May 2012.
- 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, 2012. Air Toxics Hot Spots Program Risk Assessment Guidelines. Revised Technical Support Document for Exposure Assessment and Stochastic Analysis. August, 2012.

Potential exposures to DPM and $PM_{2.5}$ from proposed Project construction activities were evaluated for off-site sensitive receptors in close proximity to the Revised Project. Using air dispersion models, receptor concentrations were estimated and excess lifetime cancer risks and chronic non-cancer hazard indexes were calculated. These risks were then compared to the significance thresholds identified in the BAAQMD CEQA guidelines.

3. Methodology and Significance Thresholds

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4. Construction Emissions

Construction emissions were calculated as average daily emissions in pounds per day, using a default construction schedule from the latest version of California Emissions Estimation Model, known as CalEEMod Version 2013.2.2 (CAPCOA, 2013).

Construction of the Project was assumed to take place over 913 calendar days (652 work days) beginning in May 2015 and ending in October 2017. The average daily emission rates from construction equipment used during the Revised Project were determined by dividing the annual average emissions for each construction year by the number of construction days per year. In addition, emissions from haul trucks traveling to and from the site within a 1,000-foot radius were included as off-site emissions. The modeled average daily emission rates for the construction scenario are summarized in Table 1. The CalEEMod construction emissions output and emission rate calculations are provided in Appendix A.

Table 1 Construction Activity

Parameter – Year	On-site Emissions (lbs/day)	Total Off-site Emissions (lbs/day)
DPM – 2015	4.97	0.020
DPM – 2016	0.64	0.018
DPM – 2017	0.68	0.017
$PM_{2.5}$ - 2015	8.66	0.096
$PM_{2.5}$ - 2016	0.63	0.16
$PM_{2.5}$ - 2017	0.66	0.16

Presented emission rates are average daily emissions.
Source: CalEEMod 2013.2.2.

4. Construction Emissions

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5. Dispersion Modeling

To assess the impact of emitted compounds on sensitive receptors near the Project, air quality modeling using the ISCST3 atmospheric dispersion model was performed. 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 Revised Project were modeled as two poly-area sources representing the main construction site and the dog park. Off-site construction emissions for Revised Project related truck traffic were modeled as adjacent volume sources.

The model requires additional input parameters, including chemical emission data and local meteorology. Inputs for the construction phase emission rates are those described in Section 4. Meteorological data obtained from the BAAQMD for the nearest met station (Concord) and the three latest available years of record (2003-2005) 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. Because the site is located in a hillside area, digital elevation model (DEM) data for the 7.5-minute Walnut Creek topographic area were obtained and included in the model runs to account for complex terrain.

DPM emissions were based on the CalEEMod construction runs, using annual exhaust PM_{10} construction emissions presented in lbs/day. The $PM_{2.5}$ emissions were taken from the CalEEMod $PM_{2.5}$ total, which includes exhaust $PM_{2.5}$ as well as fugitive dust $PM_{2.5}$. Off-site construction emissions from haul trucks were also obtained from the CalEEMod construction runs, proportioning the emissions for the haul truck trips of 20.7 miles to take into account the 0.75 mile route within 1,000 feet of the project site. An emission release height of 4.15 meters was used as representative of the stack exhaust height for off-road construction equipment and off-site haul trucks and an initial vertical dispersion parameter of 1.93 m was used, per CARB guidance (2000). The lateral dispersion parameter for the truck volume sources along Deer Hill Road and Pleasant Hill Road were determined by dividing the width of the traveled roadway by 2.15.

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

For all modeling runs, a unit emission rate of 1 gm/sec was used. The unit emission rates were proportioned among either the volume sources for truck traffic, or proportioned over the poly-area sources for on-site construction emissions. The maximum ISCST3 concentrations from the output files were then multiplied by

5. Dispersion Modeling

the emission rates calculated in Appendix A to obtain the maximum ground-level concentrations at the maximum exposed individual resident (MEIR) near the Project site. The ground level DPM and $PM_{2.5}$ concentrations from the on-site and off-site sources that were used in the risk calculation spreadsheets are provided in Table C1 of Appendix C. The ISCST3 model output for the emission sources is presented in Appendix B. The configuration of the sources and the receptor locations are presented in Figure 1.

6. Risk Characterizations

6.1 CARCINOGENIC CHEMICAL RISK

The BAAQMD has established a threshold of ten in a million (10E–06) 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.

Cancer risks were calculated using BAAQMD recommended methods for a residential receptor. For the inhalation pathway, 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. To calculate the contaminant dose, the following equation was used:

$$Dose_{AIR} = (C_{air} \times EF \times ED \times [BR/BW] \times A \times CF) / AT$$

Where:

$Dose_{AIR}$	=	dose by inhalation (mg/kg-day)
C_{air}	=	concentration of contaminant in air ($\mu g/m^3$)
EF	=	exposure frequency (days/year)
ED	=	exposure duration (years – construction period)
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)
AT	=	averaging time (days)

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. For this assessment, the default value of 1 was used. The daily breathing rate for an adult is 302 L/kg-day and for a child is 581 L/kg-day (BAAQMD, 2012). The residential exposure frequency (EF) is set at 350 days per year to allow for a two week period away from home each year (OEHHA, 2012).

OEHHA and BAAQMD procedures require the incorporation of age sensitivity factors (ASF) into the evaluation. The AT (averaging time) for lifetime cancer risks is 70 years for all cases. The exposure duration (ED) and ASFs for the various age-groups are provided herein:

ED	ASF
0.25 years – third trimester	10
2 years for 0-2 age group	10
7 years for 2-9 age group	3
14 years for 2-16 age group	3
54 years for 16-70 age group	1

To calculate the overall cancer risk, the risk for each appropriate age group is calculated using appropriate age-sensitivity factors (ASFs), chemical-specific cancer potency factor (CPF) for each chemical of concern, and the fraction of time at home (FAH) as per the following equation:

$$Cancer\ Risk_{AIR} = Dose_{AIR} \times CPF \times ASF \times FAH$$

The CPFs used in the assessment were obtained from OEHHA guidance. For DPM, a CPF of 1.1 mg/kg-day^{-1} was used.

The excess lifetime cancer risk to the maximally exposed individual resident (MEIR) during the construction period was calculated, based on the factors provided above. For the adult exposure scenario, an ASF of 1.7 was applied to the calculated cancer risk number to give the estimated excess cancer risk over a 70-year lifetime. For the child exposure scenario, a 9-year exposure period was used, as per BAAQMD and OEHHA guidance (BAAQMD, 2012). In addition, an ASF of 4.7 was applied to the excess cancer risk number to account for the increased sensitivity of children to air pollutants during the 9-year exposure period. Finally, a fraction of time at home (FAH) was applied, as per OEHHA guidance (OEHHA, 2012). For the unmitigated scenario, a FAH factor of 1 (receptor at home 24 hours per day) was assumed. The calculated results are provided in Appendix C.

6.2 NON-CARCINOGENIC HAZARDS

An evaluation of the potential non-cancer effects of chronic chemical exposures was also conducted. 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.

To quantify non-carcinogenic impacts, the hazard index approach was used. 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. For compounds affecting the same toxicological endpoint, this ratio is summed. Where the total equals or exceeds one, a health hazard is presumed to exist. In a manner consistent with the assessment of carcinogenic exposures, REL/RfC (reference concentration) values were converted to units expressed in mg/kg/day to accommodate the above intake algorithm.

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.

6.3 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. The modeling results for $PM_{2.5}$ are summarized in Table 2 and Table 4; the model runs are provided in Appendix B.

6. Risk Characterizations

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7. Conclusions

The residential health risk values are based on the maximum modeled receptor concentration over the construction exposure period, conservatively assuming a 24-hour outdoor exposure and averaged over a 70-year lifetime. According to the modeling results, the MEIR is an off-site residence east of the Project site, across Pleasant Hill Road. Results of the health risk assessment indicate that the maximum incremental cancer risk during the construction phase of the Revised Project for a ground-floor off-site adult resident located near the Revised Project site is 3.3 per million, which is less than the significance threshold of 10 per million. However, the incremental cancer risk for the child exposure scenario was estimated to be 18 per million for off-site residents, which exceeds the significance threshold of 10 per million. Therefore, mitigation measures are warranted.

For non-carcinogenic effects, the hazard index identified for each toxicological endpoint totaled less than one. Therefore, chronic non-carcinogenic hazards are within acceptable limits. Lastly, the $PM_{2.5}$ annual concentrations are greater than the BAAQMD significance threshold. The unmitigated health risk results for residential receptors are summarized in Table 2. Since the exposure durations for school-based and day care sensitive receptors are lower than the exposure duration of residential receptors, only the health risk values for the residential receptors are reported in Table 2.

Table 2 Health Risk Assessment Results

Receptor	Cancer Risk		Chronic Hazard Index	$PM_{2.5}$ ($\mu g/m^3$)
	Adult Resident (per million)	Child Resident (per million)		
Maximum Exposed Individual Resident	3.3	18	0.087	0.56
BAAQMD Threshold	10	10	1.0	0.3
Exceeds Threshold	No	Yes	No	Yes

Sources: Lakes AERMOD View, 8.7, 2014.

It should be noted that these health impacts were based on conservative (i.e., health protective) assumptions. The USEPA (2005) and OEHHA (2012) 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 do 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 risk and usually overestimate exposure and thus risk. For this resident-based risk assessment, the following conservative assumptions were used:

- To determine the MEIR for the unmitigated scenario, as reported in Table 2, it was assumed that children and/or adults stood outside of their residence for 24 hours per day, 350 days/year for 9 years (children) or 70 years (adults). In reality, it is likely that children and adults typically will spend just over one hour per day outdoors at their residences (CARB, 1991), which would result in a lower estimated risk value.

7. Conclusions

- For the MEIR scenario, it was assumed that children and adults remained at home one hundred percent of the time (i.e., fraction of time at home of 1.0). In reality, it is likely that children and adults would only spend a fraction of time at home (FAH), which would result in a lower estimated risk value. OEHHA (2012) recommends the following FAH values for estimating health risk values:

Age Range	FAH
Third Trimester – 2	0.85
2-16	0.72
16-70	0.73

- The calculated risk for pregnant women and children from 0-2 years was multiplied by a factor of 10 (age sensitivity factor) and the calculated risk for children from 2-16 years was multiplied by a factor of 3 to account for early life exposure and uncertainty in child vs. adult exposure impacts. Thus, the estimated risks are conservative.

Nevertheless, because the carcinogenic risks for the child scenario and maximum annual $PM_{2.5}$ concentrations are predicted to be above the significance thresholds, mitigation measures are warranted. The Certified Project identified and proposed the following mitigation measure (Mitigation AQ-2a) for construction equipment:

> **Mitigation Measure AQ-2:** The construction contractor shall implement the following measures to reduce off-road exhaust emissions during grading and construction activities. To assure compliance, the City of Lafayette shall verify that these measures have been implemented during normal construction site inspections:
>
> - Large off-road construction equipment with horsepower (hp) ratings of 50 hp or higher shall meet the United States Environmental Protection Agency-Certified emission standard for Tier 3 off-road equipment. Tier 3 engines between 50 and 750 horsepower are available for 2006 to 2008 model years. A list of construction equipment by type and model year shall be maintained by the construction contractor on-site.
>
> - All construction equipment shall be properly serviced and maintained to the manufacturer's standards to reduce operational emissions.
>
> - Non-essential idling of construction equipment shall be limited to no more than five consecutive minutes.
>
> - Construction activities shall be suspended on "Spare the Air" days.

Mitigation Measure AQ-2, identified for the Certified Project, would apply to the Revised Project. The modeled average daily emission rates for the construction scenario with mitigation are summarized in Table 3.

7. Conclusions

Table 3 Construction Activity – Mitigated Scenario

Parameter – Phase - Year	On-site Emissions (lbs/day)	Total Off-site Emissions (lbs/day)
DPM – 2015	1.75	0.020
DPM – 2016	0.41	0.018
DPM – 2017	0.45	0.017
$PM_{2.5}$ - 2015	3.49	0.096
$PM_{2.5}$ - 2016	0.41	0.16
$PM_{2.5}$ - 2017	0.45	0.16

Mitigation includes Tier 3 Engines for off-road equipment rated 50 HP or greater. Presented emission rates are average daily emissions.
Source: CalEEMod 2013.2.2.

Assuming a resident or child would spend only a fraction of time at home (0.73 for the adult exposure scenario and 0.75 for the child scenario; OEHHA, 2012), the mitigated risk values were calculated and results are summarized in Table 4. The results indicate that with mitigation, the excess cancer risk for the adult and child exposure scenarios would be less than the threshold values for both off-site and on-site receptors. Additionally, the $PM_{2.5}$ annual concentrations would be below the significance threshold with mitigation. Therefore, with implementation of Mitigation Measure AQ-2 described above and identified for the Certified Project, the Revised Project would have a less than significant impact with respect to excess cancer risk for off-site and on-site adult or child residents, chronic non-hazard impacts, and $PM_{2.5}$ emissions during the construction period.

Table 4 Health Risk Assessment Results – Mitigated Scenario

Receptor	Cancer Risk		Chronic Hazard Index	$PM_{2.5}$ ($\mu g/m^3$)
	Adult Resident (per million)	Child Resident (per million)		
Maximum Exposed Individual Resident	1.1	5.8	0.038	0.22
BAAQMD Threshold	10	10	1.0	0.3
Exceeds Threshold	No	No	No	No

Mitigation includes Tier 3 Engines for equipment 50 HP or greater.
Sources: Lakes AERMOD View, 8.7, 2014.

7. Conclusions

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8. References

Bay Area Air Quality Management District (BAAQMD). 2012. *California Environmental Quality Act Air Quality Guidelines.*

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

———. 2010a. Screening Tables for Air Toxics Evaluation During Construction. Version 1.0. Dated May 2010.

———. 2010b. BAAQMD Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines. Dated January 2010.

———. 2003-2005. Meteorological Data Set for Concord Monitoring Station, ISCST3 300m mixing height.

California Air Pollution Control Officers Association (CAPCOA), 2013. California Emissions Estimator Model (CalEEMod). Version 2013.2.2. 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.*

_____. 1991. *Activity Patterns of California Residents.* Prepared by the University of California, Berkeley. Final Report Contract No. A6-177-33. Dated May 1991.

Office of Environmental Health Hazard Assessment (OEHHA). 2014. Toxicity Criteria Database. http://oehha.ca.gov/risk/chemicaldb/index.asp. Accessed July 25, 2014.

———. 2012. *Air Toxics Hot Spots Program Risk Assessment Guidelines. Technical Support Document for Exposure Assessment and Stochastic Analysis.* Dated August 2012

United States Environmental Protection Agency (USEPA). 2005. *Guideline on Air Quality Models* (Revised). EPA-450/2-78-027R.

8. References

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Appendix A. Emission Rate Calculations

Appendix

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Construction Emissions - DPM and PM2.5
Input to ISCST3 Model

Onsite Construction Emissions		DPM [1]	$PM_{2.5}$ [2]
2015 Onsite Emissions	Average Daily Emissions (lbs/day)	4.970	8.659
	Average Daily Emissions (lbs/hr)	6.21E-01	1.08E+00
	Emission Rate (g/s)	7.83E-02	1.36E-01
2016 Onsite Emissions	Average Daily Emissions (lbs/day)	0.644	0.631
	Average Daily Emissions (lbs/hr)	8.05E-02	7.89E-02
	Emission Rate (g/s)	1.01E-02	9.94E-03
2017 Onsite Emissions	Average Daily Emissions (lbs/day)	0.677	0.658
	Average Daily Emissions (lbs/hr)	8.46E-02	8.23E-02
	Emission Rate (g/s)	1.07E-02	1.04E-02

Note: Onsite emissions assumed to be evenly distributed over entire construction area.

Offsite Construction Emissions		DPM [1]	$PM_{2.5}$ [2]
2015 Offsite Emissions	Haul Length Daily Emissions (lbs/day)	0.020	0.096
	Hauling Emissions w/in 1,000 ft (lbs/day) [3]	7.25E-04	3.48E-03
	Emission Rate (lbs/hr)	9.06E-05	4.35E-04
	Emission Rate (g/s)	1.14E-05	5.48E-05
2016 Offsite Emissions	Haul Length Daily Emissions (lbs/day)	0.018	0.156
	Hauling Emissions w/in 1,000 ft (lbs/day) [3]	6.52E-04	5.65E-03
	Emission Rate (lbs/hr)	8.15E-05	7.07E-04
	Emission Rate (g/s)	1.03E-05	8.90E-05
2017 Offsite Emissions	Haul Length Daily Emissions (lbs/day)	0.017	0.160
	Hauling Emissions w/in 1,000 ft (lbs/day) [3]	6.16E-04	5.80E-03
	Emission Rate (lbs/hr)	7.70E-05	7.25E-04
	Emission Rate (g/s)	9.70E-06	9.13E-05

Note: Offsite emissions evenly distributed over 95 modeled volume sources.

Hours per work day (7:00 AM to 4:00 PM, 1-hour lunch break)	8

Year	Total days per year	Scalar [4]
2015	244	0.668
2016	365	1.000
2017	302	0.827

Default Hauling Length (miles)	20.7
Haul Length within 1,000 ft of Site (mile)	0.75

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

[2] $PM_{2.5}$ emissions taken as total $PM_{2.5}$ (exhaust and fugitive dust) emissions from CalEEMod average daily emissions.

[3] Emissions from CalEEMod offsite average daily emissions, which is based on haul truck trips of 20.7 miles (Avg. haul distance) to evaluate emissions from 0.75 mile route within 1,000 feet of project site.

[4] Scalar applied to account for duration of construction operations during the year.

The ISCST3 model accounts for weekends off using the SHRDOW module.

Construction Emissions - DPM and PM2.5
Input to ISCST3 Model
with Mitigation (Tier 3 Engines)

Onsite Construction Emissions - Mitigated		DPM [1]	$PM_{2.5}$ [2]
2015 Onsite Emissions	Average Daily Emissions (lbs/day)	1.746	3.486
	Average Daily Emissions (lbs/hr)	2.18E-01	4.36E-01
	Emission Rate (g/s)	2.75E-02	5.49E-02
2016 Onsite Emissions	Average Daily Emissions (lbs/day)	0.413	0.413
	Average Daily Emissions (lbs/hr)	5.16E-02	5.16E-02
	Emission Rate (g/s)	6.50E-03	6.50E-03
2017 Onsite Emissions	Average Daily Emissions (lbs/day)	0.447	0.447
	Average Daily Emissions (lbs/hr)	5.59E-02	5.59E-02
	Emission Rate (g/s)	7.04E-03	7.04E-03

Note: Onsite emissions assumed to be evenly distributed over entire construction area.

Offsite Construction Emissions - Mitigated		DPM [1]	$PM_{2.5}$ [2]
2015 Offsite Emissions	Haul Length Daily Emissions (lbs/day)	0.020	0.096
	Hauling Emissions w/in 1,000 ft (lbs/day) [3]	7.25E-04	3.48E-03
	Emission Rate (lbs/hr)	9.06E-05	4.35E-04
	Emission Rate (g/s)	1.14E-05	5.48E-05
2016 Offsite Emissions	Haul Length Daily Emissions (lbs/day)	0.018	0.156
	Hauling Emissions w/in 1,000 ft (lbs/day) [3]	6.52E-04	5.65E-03
	Emission Rate (lbs/hr)	8.15E-05	7.07E-04
	Emission Rate (g/s)	1.03E-05	8.90E-05
2017 Offsite Emissions	Haul Length Daily Emissions (lbs/day)	0.017	0.160
	Hauling Emissions w/in 1,000 ft (lbs/day) [3]	6.16E-04	5.80E-03
	Emission Rate (lbs/hr)	7.70E-05	7.25E-04
	Emission Rate (g/s)	9.70E-06	9.13E-05

Note: Offsite emissions evenly distributed over 95 modeled volume sources.

Hours per work day (7:00 AM to 4:00 PM, 1-hour lunch break)	8

Year	Total days per year	Scalar [4]
2015	244	0.668
2016	365	1.000
2017	302	0.827

Default Hauling Length (miles)	20.7
Haul Length within 1,000 ft of Site (mile)	0.75

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

[2] $PM_{2.5}$ emissions taken as total $PM_{2.5}$ (exhaust and fugitive dust) emissions from CalEEMod average daily emissions.

[3] Emissions from CalEEMod offsite average daily emissions, which is based on haul truck trips of 20.7 miles (Avg. haul distance) to evaluate emissions from 0.75 mile route within 1,000 feet of project site.

[4] Scalar applied to account for duration of construction operations during the year.

The ISCST3 model accounts for weekends off using the SHRDOW module.

The Homes at Deer Hill (Terraces of Lafayette Project Alternative)

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	160.00	1000sqft	3.67	160,000.00	0
City Park	14.05	Acre	14.05	612,018.00	0
Single Family Housing	44.00	Dwelling Unit	4.55	113,275.00	121

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Land Use - Based on project description

Construction Phase - Construction schedule from Applicant

Off-road Equipment - Provided construction information

Trips and VMT - Provided construction information

Grading - Site balanced

Architectural Coating - Non-residential architectural coating areas adjusted for lot striping, and no painting for park/open space.

Vehicle Trips - TJKM, 2014

Vechicle Emission Factors - Residential fleet mix

Woodstoves - No woodstoves; 100% gas fireplaces.

Area Coating - Non-residential coating methodology

Water And Wastewater - 100% aerobic

Construction Off-road Equipment Mitigation - BAAQMD's Fugitive Dust Control Measures

Energy Mitigation - Residential buildings 25% more efficient than 2008 Standards under 2013 Building and Energy Standards

Water Mitigation - CALGreen and City's Water Efficiency Landscape Ordinance

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	308,409.00	9,600.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	925,227.00	0.00
tblAreaCoating	Area_Nonresidential_Exterior	308409	9600
tblAreaCoating	Area_Nonresidential_Interior	925227	0
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	370.00	521.00
tblConstructionPhase	NumDays	20.00	26.00
tblConstructionPhase	NumDays	35.00	65.00
tblConstructionPhase	NumDays	35.00	10.00
tblConstructionPhase	NumDays	35.00	30.00
tblConstructionPhase	NumDays	20.00	15.00
tblConstructionPhase	PhaseEndDate	11/27/2017	10/30/2017
tblConstructionPhase	PhaseEndDate	11/20/2017	10/30/2017
tblConstructionPhase	PhaseStartDate	10/31/2017	10/3/2017
tblConstructionPhase	PhaseStartDate	10/31/2017	10/10/2017
tblFireplaces	NumberGas	24.20	44.00
tblFireplaces	NumberWood	19.80	0.00
tblLandUse	LandUseSquareFeet	79,200.00	113,275.00
tblLandUse	LotAcreage	14.29	4.55
tblLandUse	Population	126.00	121.00
tblOffRoadEquipment	HorsePower	174.00	180.00
tblOffRoadEquipment	HorsePower	174.00	180.00
tblOffRoadEquipment	HorsePower	174.00	180.00
tblOffRoadEquipment	HorsePower	125.00	89.00
tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	HorsePower	255.00	436.00
tblOffRoadEquipment	HorsePower	255.00	600.00
tblOffRoadEquipment	HorsePower	255.00	436.00
tblOffRoadEquipment	HorsePower	255.00	600.00
tblOffRoadEquipment	HorsePower	255.00	436.00
tblOffRoadEquipment	HorsePower	361.00	407.00
tblOffRoadEquipment	HorsePower	361.00	500.00
tblOffRoadEquipment	HorsePower	361.00	500.00
tblOffRoadEquipment	HorsePower	361.00	187.00
tblOffRoadEquipment	HorsePower	361.00	407.00
tblOffRoadEquipment	HorsePower	80.00	232.00
tblOffRoadEquipment	HorsePower	80.00	354.00
tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	HorsePower	80.00	84.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblTripsAndVMT	HaulingTripLength	20.00	20.70
tblTripsAndVMT	HaulingTripNumber	43.00	57.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	131.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	30.00	20.00
tblTripsAndVMT	WorkerTripNumber	340.00	50.00
tblTripsAndVMT	WorkerTripNumber	68.00	5.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00
tblVehicleEF	HHD	0.02	2.7020e-003
tblVehicleEF	HHD	0.02	2.7020e-003
tblVehicleEF	HHD	0.02	2.7020e-003
tblVehicleEF	LDA	0.53	0.66
tblVehicleEF	LDA	0.53	0.66
tblVehicleEF	LDA	0.53	0.66
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT2	0.18	0.22
tblVehicleEF	LDT2	0.18	0.22
tblVehicleEF	LDT2	0.18	0.22
tblVehicleEF	LHD1	0.04	4.5850e-003
tblVehicleEF	LHD1	0.04	4.5850e-003
tblVehicleEF	LHD1	0.04	4.5850e-003
tblVehicleEF	LHD2	4.8500e-003	6.1200e-004
tblVehicleEF	LHD2	4.8500e-003	6.1200e-004

tblVehicleEF	LHD2	4.8500e-003	6.1200e-004
tblVehicleEF	MCY	6.3780e-003	7.9780e-003
tblVehicleEF	MCY	6.3780e-003	7.9780e-003
tblVehicleEF	MCY	6.3780e-003	7.9780e-003
tblVehicleEF	MDV	0.15	0.02
tblVehicleEF	MDV	0.15	0.02
tblVehicleEF	MDV	0.15	0.02
tblVehicleEF	MH	2.0510e-003	2.5900e-004
tblVehicleEF	MH	2.0510e-003	2.5900e-004
tblVehicleEF	MH	2.0510e-003	2.5900e-004
tblVehicleEF	MHD	9.7870e-003	1.2360e-003
tblVehicleEF	MHD	9.7870e-003	1.2360e-003
tblVehicleEF	MHD	9.7870e-003	1.2360e-003
tblVehicleEF	OBUS	1.2250e-003	1.5500e-004
tblVehicleEF	OBUS	1.2250e-003	1.5500e-004
tblVehicleEF	OBUS	1.2250e-003	1.5500e-004
tblVehicleEF	SBUS	2.0950e-003	2.6500e-004
tblVehicleEF	SBUS	2.0950e-003	2.6500e-004
tblVehicleEF	SBUS	2.0950e-003	2.6500e-004
tblVehicleEF	UBUS	1.4830e-003	1.8700e-004
tblVehicleEF	UBUS	1.4830e-003	1.8700e-004
tblVehicleEF	UBUS	1.4830e-003	1.8700e-004
tblVehicleTrips	CC_TL	7.30	2.25
tblVehicleTrips	CNW_TL	7.30	2.25
tblVehicleTrips	CW_TL	9.50	2.25
tblVehicleTrips	DV_TP	28.00	0.00
tblVehicleTrips	DV_TP	11.00	0.00
tblVehicleTrips	HO_TL	5.40	10.10
tblVehicleTrips	HS_TL	4.30	10.10
tblVehicleTrips	HW_TL	12.40	10.10
tblVehicleTrips	PB_TP	6.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	66.00	100.00
tblVehicleTrips	PR_TP	86.00	100.00
tblVehicleTrips	ST_TR	1.59	246.20
tblVehicleTrips	ST_TR	10.08	10.75
tblVehicleTrips	SU_TR	1.59	246.20
tblVehicleTrips	SU_TR	8.77	10.75
tblVehicleTrips	WD_TR	1.59	52.02
tblVehicleTrips	WD_TR	9.57	11.20
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	NumberCatalytic	1.54	0.00
tblWoodstoves	NumberNoncatalytic	1.54	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.8561	10.3574	6.4061	8.3500e-003	0.7971	0.4365	1.2336	0.3630	0.4030	0.7660	0.0000	788.0410	788.0410	0.2216	0.0000	792.6941
2016	0.2273	1.2878	1.4587	2.4100e-003	0.0678	0.0865	0.1543	0.0182	0.0846	0.1028	0.0000	198.8873	198.8873	0.0216	0.0000	199.3405
2017	1.0221	1.1400	1.2763	2.1600e-003	0.0581	0.0750	0.1331	0.0156	0.0728	0.0884	0.0000	177.8370	177.8370	0.0199	0.0000	178.2551
Total	**2.1056**	**12.7853**	**9.1411**	**0.0129**	**0.9230**	**0.5980**	**1.5210**	**0.3968**	**0.5603**	**0.9572**	**0.0000**	**1,164.7653**	**1,164.7653**	**0.2631**	**0.0000**	**1,170.2896**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.2263	3.8904	4.5861	8.3500e-003	0.3534	0.1545	0.5079	0.1587	0.1544	0.3130	0.0000	788.0401	788.0401	0.2216	0.0000	792.6932
2016	0.1364	0.9063	1.4785	2.4100e-003	0.0627	0.0563	0.1189	0.0169	0.0561	0.0730	0.0000	198.8872	198.8872	0.0216	0.0000	199.3403
2017	0.9432	0.8114	1.2962	2.1600e-003	0.0537	0.0502	0.1038	0.0145	0.0500	0.0645	0.0000	177.8368	177.8368	0.0199	0.0000	178.2549
Total	**1.3058**	**5.6081**	**7.3608**	**0.0129**	**0.4697**	**0.2610**	**0.7307**	**0.1901**	**0.2605**	**0.4506**	**0.0000**	**1,164.7641**	**1,164.7641**	**0.2631**	**0.0000**	**1,170.2885**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**37.98**	**56.14**	**19.48**	**0.00**	**49.11**	**56.36**	**51.96**	**52.10**	**53.51**	**52.93**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.5513	3.8600e-003	0.3316	2.0000e-005		2.0100e-003	2.0100e-003		2.0100e-003	2.0100e-003	0.0000	3.6383	3.6383	6.0000e-004	6.0000e-005	3.6686
Energy	8.3700e-003	0.0715	0.0304	4.6000e-004		5.7800e-003	5.7800e-003		5.7800e-003	5.7800e-003	0.0000	214.3394	214.3394	7.5300e-003	2.7500e-003	215.3498
Mobile	0.8961	0.7754	7.3346	0.0135	1.1125	0.0106	1.1231	0.2960	9.7700e-003	0.3058	0.0000	987.6200	987.6200	0.0491	0.0000	988.6517
Waste						0.0000	0.0000		0.0000	0.0000	10.5616	0.0000	10.5616	0.6242	0.0000	23.6693
Water						0.0000	0.0000		0.0000	0.0000	1.0143	23.3977	24.4119	4.5500e-003	2.4200e-003	25.2591
Total	**4.4558**	**0.8508**	**7.6967**	**0.0140**	**1.1125**	**0.0184**	**1.1309**	**0.2960**	**0.0176**	**0.3135**	**11.5759**	**1,228.9953**	**1,240.5712**	**0.6860**	**5.2300e-003**	**1,256.5984**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.5513	3.8600e-003	0.3316	2.0000e-005		2.0100e-003	2.0100e-003		2.0100e-003	2.0100e-003	0.0000	3.6383	3.6383	6.0000e-004	6.0000e-005	3.6686
Energy	6.6300e-003	0.0566	0.0241	3.6000e-004		4.5800e-003	4.5800e-003		4.5800e-003	4.5800e-003	0.0000	195.8984	195.8984	7.1500e-003	2.4200e-003	196.7992
Mobile	0.8961	0.7754	7.3346	0.0135	1.1125	0.0106	1.1231	0.2960	9.7700e-003	0.3058	0.0000	987.6200	987.6200	0.0491	0.0000	988.6517
Waste						0.0000	0.0000		0.0000	0.0000	10.5616	0.0000	10.5616	0.6242	0.0000	23.6693
Water						0.0000	0.0000		0.0000	0.0000	0.8114	21.3432	22.1546	3.7400e-003	1.9600e-003	22.8411
Total	**4.4540**	**0.8359**	**7.6903**	**0.0139**	**1.1125**	**0.0172**	**1.1297**	**0.2960**	**0.0164**	**0.3123**	**11.3730**	**1,208.4998**	**1,219.8728**	**0.6848**	**4.4400e-003**	**1,235.6298**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.04**	**1.75**	**0.08**	**0.72**	**0.00**	**6.52**	**0.11**	**0.00**	**6.83**	**0.38**	**1.75**	**1.67**	**1.67**	**0.17**	**15.11**	**1.67**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	5/1/2015	6/5/2015	5	26	
2	Rough Grading	Grading	6/6/2015	9/4/2015	5	65	
3	Pad Finish	Grading	9/5/2015	9/18/2015	5	10	
4	Fine Grading/Baserock	Grading	9/19/2015	10/30/2015	5	30	
5	Building Construction	Building Construction	10/31/2015	10/30/2017	5	521	
6	Architectural Coating	Architectural Coating	10/3/2017	10/30/2017	5	20	
7	Paving	Paving	10/10/2017	10/30/2017	5	15	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 229,382; Residential Outdoor: 76,461; Non-Residential Indoor: 0; Non-Residential Outdoor: 9,600 (Architectural

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	162	0.38
Demolition	Rubber Tired Dozers	1	8.00	436	0.40
Demolition	Rubber Tired Dozers	1	8.00	600	0.40
Rough Grading	Excavators	0	8.00	162	0.38
Rough Grading	Graders	1	8.00	180	0.41
Rough Grading	Rollers	1	8.00	232	0.38
Rough Grading	Rollers	1	8.00	354	0.38
Rough Grading	Rubber Tired Dozers	2	8.00	436	0.40
Rough Grading	Rubber Tired Dozers	1	8.00	600	0.40
Rough Grading	Scrapers	3	8.00	407	0.48
Rough Grading	Scrapers	3	8.00	500	0.48
Rough Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Pad Finish	Excavators	0	8.00	162	0.38
Pad Finish	Graders	0	8.00	180	0.41
Pad Finish	Rollers	1	8.00	84	0.38
Pad Finish	Rubber Tired Dozers	1	8.00	436	0.40
Pad Finish	Scrapers	1	8.00	500	0.48
Pad Finish	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Fine Grading/Baserock	Excavators	0	8.00	162	0.38
Fine Grading/Baserock	Graders	1	8.00	180	0.41
Fine Grading/Baserock	Rollers	2	8.00	84	0.38
Fine Grading/Baserock	Rubber Tired Dozers	0	8.00	255	0.40
Fine Grading/Baserock	Scrapers	1	8.00	187	0.48
Fine Grading/Baserock	Scrapers	1	8.00	407	0.48
Fine Grading/Baserock	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Cranes	0	7.00	226	0.29
Building Construction	Forklifts	1	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Pavers	1	8.00	89	0.42
Paving	Paving Equipment	0	8.00	130	0.36
Paving	Rollers	3	8.00	84	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	4.00	57.00	12.40	7.30	20.70	LD_Mix	HDT_Mix	HHDT
Rough Grading	12	20.00	12.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pad Finish	3	8.00	4.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Fine Grading/Baserock	6	15.00	4.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	3	50.00	10.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	5.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	15.00	10.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.6300e-003	0.0000	4.6300e-003	7.0000e-004	0.0000	7.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0823	0.9683	0.5795	7.5000e-004		0.0436	0.0436		0.0405	0.0405	0.0000	71.0626	71.0626	0.0199	0.0000	71.4801
Total	**0.0823**	**0.9683**	**0.5795**	**7.5000e-004**	**4.6300e-003**	**0.0436**	**0.0482**	**7.0000e-004**	**0.0405**	**0.0412**	**0.0000**	**71.0626**	**71.0626**	**0.0199**	**0.0000**	**71.4801**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.7000e-004	0.0102	7.8300e-003	2.0000e-005	5.0000e-004	1.5000e-004	6.5000e-004	1.4000e-004	1.4000e-004	2.8000e-004	0.0000	2.0447	2.0447	2.0000e-005	0.0000	2.0451
Vendor	7.4000e-004	5.9900e-003	8.1000e-003	1.0000e-005	3.3000e-004	1.0000e-004	4.3000e-004	1.0000e-004	9.0000e-005	1.8000e-004	0.0000	1.1340	1.1340	1.0000e-005	0.0000	1.1342
Worker	8.2000e-004	1.2000e-003	0.0118	2.0000e-005	1.7800e-003	2.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.9000e-004	0.0000	1.6601	1.6601	1.0000e-004	0.0000	1.6621
Total	**2.3300e-003**	**0.0174**	**0.0277**	**5.0000e-005**	**2.6100e-003**	**2.7000e-004**	**2.8700e-003**	**7.1000e-004**	**2.4000e-004**	**9.5000e-004**	**0.0000**	**4.8387**	**4.8387**	**1.3000e-004**	**0.0000**	**4.8413**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.9800e-003	0.0000	1.9800e-003	3.0000e-004	0.0000	3.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0181	0.3558	0.4539	7.5000e-004		0.0157	0.0157		0.0157	0.0157	0.0000	71.0625	71.0625	0.0199	0.0000	71.4800
Total	**0.0181**	**0.3558**	**0.4539**	**7.5000e-004**	**1.9800e-003**	**0.0157**	**0.0177**	**3.0000e-004**	**0.0157**	**0.0160**	**0.0000**	**71.0625**	**71.0625**	**0.0199**	**0.0000**	**71.4800**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.7000e-004	0.0102	7.8300e-003	2.0000e-005	4.6000e-004	1.5000e-004	6.2000e-004	1.3000e-004	1.4000e-004	2.7000e-004	0.0000	2.0447	2.0447	2.0000e-005	0.0000	2.0451
Vendor	7.4000e-004	5.9900e-003	8.1000e-003	1.0000e-005	3.1000e-004	1.0000e-004	4.1000e-004	9.0000e-005	9.0000e-005	1.8000e-004	0.0000	1.1340	1.1340	1.0000e-005	0.0000	1.1342
Worker	8.2000e-004	1.2000e-003	0.0118	2.0000e-005	1.6400e-003	2.0000e-005	1.6500e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.6601	1.6601	1.0000e-004	0.0000	1.6621
Total	**2.3300e-003**	**0.0174**	**0.0277**	**5.0000e-005**	**2.4100e-003**	**2.7000e-004**	**2.6800e-003**	**6.6000e-004**	**2.4000e-004**	**9.0000e-004**	**0.0000**	**4.8387**	**4.8387**	**1.3000e-004**	**0.0000**	**4.8413**

3.3 Rough Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.7078	0.0000	0.7078	0.3358	0.0000	0.3358	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.6292	8.0192	4.8312	6.1400e-003		0.3257	0.3257		0.2997	0.2997	0.0000	585.3579	585.3579	0.1748	0.0000	589.0277
Total	**0.6292**	**8.0192**	**4.8312**	**6.1400e-003**	**0.7078**	**0.3257**	**1.0335**	**0.3358**	**0.2997**	**0.6354**	**0.0000**	**585.3579**	**585.3579**	**0.1748**	**0.0000**	**589.0277**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.5400e-003	0.0449	0.0607	9.0000e-005	2.5100e-003	7.2000e-004	3.2300e-003	7.2000e-004	6.6000e-004	1.3800e-003	0.0000	8.5046	8.5046	8.0000e-005	0.0000	8.5062
Worker	2.7400e-003	4.0100e-003	0.0393	7.0000e-005	5.9200e-003	5.0000e-005	5.9700e-003	1.5700e-003	5.0000e-005	1.6200e-003	0.0000	5.5336	5.5336	3.2000e-004	0.0000	5.5404
Total	**8.2800e-003**	**0.0489**	**0.1000**	**1.6000e-004**	**8.4300e-003**	**7.7000e-004**	**9.2000e-003**	**2.2900e-003**	**7.1000e-004**	**3.0000e-003**	**0.0000**	**14.0382**	**14.0382**	**4.0000e-004**	**0.0000**	**14.0466**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3026	0.0000	0.3026	0.1435	0.0000	0.1435	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1507	2.9141	3.2658	6.1400e-003		0.1105	0.1105		0.1105	0.1105	0.0000	585.3572	585.3572	0.1748	0.0000	589.0270
Total	**0.1507**	**2.9141**	**3.2658**	**6.1400e-003**	**0.3026**	**0.1105**	**0.4131**	**0.1435**	**0.1105**	**0.2541**	**0.0000**	**585.3572**	**585.3572**	**0.1748**	**0.0000**	**589.0270**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.5400e-003	0.0449	0.0607	9.0000e-005	2.3500e-003	7.2000e-004	3.0700e-003	6.8000e-004	6.6000e-004	1.3400e-003	0.0000	8.5046	8.5046	8.0000e-005	0.0000	8.5062
Worker	2.7400e-003	4.0100e-003	0.0393	7.0000e-005	5.4600e-003	5.0000e-005	5.5100e-003	1.4600e-003	5.0000e-005	1.5100e-003	0.0000	5.5336	5.5336	3.2000e-004	0.0000	5.5404
Total	**8.2800e-003**	**0.0489**	**0.1000**	**1.6000e-004**	**7.8100e-003**	**7.7000e-004**	**8.5800e-003**	**2.1400e-003**	**7.1000e-004**	**2.8500e-003**	**0.0000**	**14.0382**	**14.0382**	**4.0000e-004**	**0.0000**	**14.0466**

3.4 Pad Finish - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0354	0.0000	0.0354	0.0171	0.0000	0.0171	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0228	0.2695	0.1847	1.9000e-004		0.0123	0.0123		0.0113	0.0113	0.0000	18.3838	18.3838	5.4900e-003	0.0000	18.4991
Total	**0.0228**	**0.2695**	**0.1847**	**1.9000e-004**	**0.0354**	**0.0123**	**0.0477**	**0.0171**	**0.0113**	**0.0284**	**0.0000**	**18.3838**	**18.3838**	**5.4900e-003**	**0.0000**	**18.4991**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8000e-004	2.3000e-003	3.1100e-003	0.0000	1.3000e-004	4.0000e-005	1.7000e-004	4.0000e-005	3.0000e-005	7.0000e-005	0.0000	0.4361	0.4361	0.0000	0.0000	0.4362
Worker	1.7000e-004	2.5000e-004	2.4200e-003	0.0000	3.6000e-004	0.0000	3.7000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3405	0.3405	2.0000e-005	0.0000	0.3410
Total	**4.5000e-004**	**2.5500e-003**	**5.5300e-003**	**0.0000**	**4.9000e-004**	**4.0000e-005**	**5.4000e-004**	**1.4000e-004**	**3.0000e-005**	**1.7000e-004**	**0.0000**	**0.7767**	**0.7767**	**2.0000e-005**	**0.0000**	**0.7772**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0151	0.0000	0.0151	7.3200e-003	0.0000	7.3200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.7200e-003	0.0925	0.1054	1.9000e-004		3.7600e-003	3.7600e-003		3.7600e-003	3.7600e-003	0.0000	18.3838	18.3838	5.4900e-003	0.0000	18.4991
Total	**4.7200e-003**	**0.0925**	**0.1054**	**1.9000e-004**	**0.0151**	**3.7600e-003**	**0.0189**	**7.3200e-003**	**3.7600e-003**	**0.0111**	**0.0000**	**18.3838**	**18.3838**	**5.4900e-003**	**0.0000**	**18.4991**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8000e-004	2.3000e-003	3.1100e-003	0.0000	1.2000e-004	4.0000e-005	1.6000e-004	3.0000e-005	3.0000e-005	7.0000e-005	0.0000	0.4361	0.4361	0.0000	0.0000	0.4362
Worker	1.7000e-004	2.5000e-004	2.4200e-003	0.0000	3.4000e-004	0.0000	3.4000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.3405	0.3405	2.0000e-005	0.0000	0.3410
Total	**4.5000e-004**	**2.5500e-003**	**5.5300e-003**	**0.0000**	**4.6000e-004**	**4.0000e-005**	**5.0000e-004**	**1.2000e-004**	**3.0000e-005**	**1.6000e-004**	**0.0000**	**0.7767**	**0.7767**	**2.0000e-005**	**0.0000**	**0.7772**

3.5 Fine Grading/Baserock - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0239	0.0000	0.0239	2.5800e-003	0.0000	2.5800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0664	0.7895	0.3965	5.9000e-004		0.0376	0.0376		0.0346	0.0346	0.0000	56.4211	56.4211	0.0168	0.0000	56.7748
Total	**0.0664**	**0.7895**	**0.3965**	**5.9000e-004**	**0.0239**	**0.0376**	**0.0615**	**2.5800e-003**	**0.0346**	**0.0372**	**0.0000**	**56.4211**	**56.4211**	**0.0168**	**0.0000**	**56.7748**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.5000e-004	6.9100e-003	9.3400e-003	1.0000e-005	3.9000e-004	1.1000e-004	5.0000e-004	1.1000e-004	1.0000e-004	2.1000e-004	0.0000	1.3084	1.3084	1.0000e-005	0.0000	1.3087
Worker	9.5000e-004	1.3900e-003	0.0136	2.0000e-005	2.0500e-003	2.0000e-005	2.0700e-003	5.4000e-004	2.0000e-005	5.6000e-004	0.0000	1.9155	1.9155	1.1000e-004	0.0000	1.9179
Total	**1.8000e-003**	**8.3000e-003**	**0.0230**	**3.0000e-005**	**2.4400e-003**	**1.3000e-004**	**2.5700e-003**	**6.5000e-004**	**1.2000e-004**	**7.7000e-004**	**0.0000**	**3.2239**	**3.2239**	**1.2000e-004**	**0.0000**	**3.2265**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0102	0.0000	0.0102	1.1000e-003	0.0000	1.1000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0146	0.2926	0.3445	5.9000e-004		0.0134	0.0134		0.0134	0.0134	0.0000	56.4210	56.4210	0.0168	0.0000	56.7748
Total	**0.0146**	**0.2926**	**0.3445**	**5.9000e-004**	**0.0102**	**0.0134**	**0.0236**	**1.1000e-003**	**0.0134**	**0.0145**	**0.0000**	**56.4210**	**56.4210**	**0.0168**	**0.0000**	**56.7748**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.5000e-004	6.9100e-003	9.3400e-003	1.0000e-005	3.6000e-004	1.1000e-004	4.7000e-004	1.0000e-004	1.0000e-004	2.1000e-004	0.0000	1.3084	1.3084	1.0000e-005	0.0000	1.3087
Worker	9.5000e-004	1.3900e-003	0.0136	2.0000e-005	1.8900e-003	2.0000e-005	1.9100e-003	5.1000e-004	2.0000e-005	5.2000e-004	0.0000	1.9155	1.9155	1.1000e-004	0.0000	1.9179
Total	**1.8000e-003**	**8.3000e-003**	**0.0230**	**3.0000e-005**	**2.2500e-003**	**1.3000e-004**	**2.3800e-003**	**6.1000e-004**	**1.2000e-004**	**7.3000e-004**	**0.0000**	**3.2239**	**3.2239**	**1.2000e-004**	**0.0000**	**3.2265**

3.6 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0348	0.2017	0.1571	2.3000e-004		0.0157	0.0157		0.0154	0.0154	0.0000	19.7760	19.7760	3.3500e-003	0.0000	19.8463
Total	**0.0348**	**0.2017**	**0.1571**	**2.3000e-004**		**0.0157**	**0.0157**		**0.0154**	**0.0154**	**0.0000**	**19.7760**	**19.7760**	**3.3500e-003**	**0.0000**	**19.8463**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1300e-003	0.0253	0.0343	5.0000e-005	1.4200e-003	4.1000e-004	1.8200e-003	4.1000e-004	3.7000e-004	7.8000e-004	0.0000	4.7975	4.7975	4.0000e-005	0.0000	4.7984
Worker	4.6400e-003	6.7900e-003	0.0665	1.2000e-004	0.0100	9.0000e-005	0.0101	2.6600e-003	8.0000e-005	2.7400e-003	0.0000	9.3646	9.3646	5.5000e-004	0.0000	9.3761
Total	**7.7700e-003**	**0.0321**	**0.1008**	**1.7000e-004**	**0.0114**	**5.0000e-004**	**0.0119**	**3.0700e-003**	**4.5000e-004**	**3.5200e-003**	**0.0000**	**14.1621**	**14.1621**	**5.9000e-004**	**0.0000**	**14.1745**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0175	0.1261	0.1595	2.3000e-004		9.4100e-003	9.4100e-003		9.4100e-003	9.4100e-003	0.0000	19.7760	19.7760	3.3500e-003	0.0000	19.8463
Total	**0.0175**	**0.1261**	**0.1595**	**2.3000e-004**		**9.4100e-003**	**9.4100e-003**		**9.4100e-003**	**9.4100e-003**	**0.0000**	**19.7760**	**19.7760**	**3.3500e-003**	**0.0000**	**19.8463**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1300e-003	0.0253	0.0343	5.0000e-005	1.3300e-003	4.1000e-004	1.7300e-003	3.8000e-004	3.7000e-004	7.6000e-004	0.0000	4.7975	4.7975	4.0000e-005	0.0000	4.7984
Worker	4.6400e-003	6.7900e-003	0.0665	1.2000e-004	9.2400e-003	9.0000e-005	9.3200e-003	2.4700e-003	8.0000e-005	2.5500e-003	0.0000	9.3646	9.3646	5.5000e-004	0.0000	9.3761
Total	**7.7700e-003**	**0.0321**	**0.1008**	**1.7000e-004**	**0.0106**	**5.0000e-004**	**0.0111**	**2.8500e-003**	**4.5000e-004**	**3.3100e-003**	**0.0000**	**14.1621**	**14.1621**	**5.9000e-004**	**0.0000**	**14.1745**

3.6 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1864	1.1210	0.9182	1.3900e-003		0.0841	0.0841		0.0824	0.0824	0.0000	117.1131	117.1131	0.0184	0.0000	117.4991
Total	**0.1864**	**1.1210**	**0.9182**	**1.3900e-003**		**0.0841**	**0.0841**		**0.0824**	**0.0824**	**0.0000**	**117.1131**	**117.1131**	**0.0184**	**0.0000**	**117.4991**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0164	0.1307	0.1878	3.1000e-004	8.4100e-003	1.9300e-003	0.0103	2.4100e-003	1.7700e-003	4.1800e-003	0.0000	28.1252	28.1252	2.3000e-004	0.0000	28.1299
Worker	0.0246	0.0361	0.3527	7.0000e-004	0.0594	4.8000e-004	0.0599	0.0158	4.4000e-004	0.0162	0.0000	53.6490	53.6490	2.9700e-003	0.0000	53.7115
Total	**0.0409**	**0.1668**	**0.5406**	**1.0100e-003**	**0.0678**	**2.4100e-003**	**0.0702**	**0.0182**	**2.2100e-003**	**0.0204**	**0.0000**	**81.7742**	**81.7742**	**3.2000e-003**	**0.0000**	**81.8414**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0955	0.7394	0.9380	1.3900e-003		0.0539	0.0539		0.0539	0.0539	0.0000	117.1129	117.1129	0.0184	0.0000	117.4990
Total	**0.0955**	**0.7394**	**0.9380**	**1.3900e-003**		**0.0539**	**0.0539**		**0.0539**	**0.0539**	**0.0000**	**117.1129**	**117.1129**	**0.0184**	**0.0000**	**117.4990**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0164	0.1307	0.1878	3.1000e-004	7.8600e-003	1.9300e-003	9.7900e-003	2.2700e-003	1.7700e-003	4.0500e-003	0.0000	28.1252	28.1252	2.3000e-004	0.0000	28.1299
Worker	0.0246	0.0361	0.3527	7.0000e-004	0.0548	4.8000e-004	0.0553	0.0147	4.4000e-004	0.0151	0.0000	53.6490	53.6490	2.9700e-003	0.0000	53.7115
Total	**0.0409**	**0.1668**	**0.5406**	**1.0100e-003**	**0.0627**	**2.4100e-003**	**0.0651**	**0.0169**	**2.2100e-003**	**0.0192**	**0.0000**	**81.7742**	**81.7742**	**3.2000e-003**	**0.0000**	**81.8414**

3.6 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1385	0.8674	0.7490	1.1500e-003		0.0625	0.0625		0.0612	0.0612	0.0000	96.6794	96.6794	0.0140	0.0000	96.9741
Total	**0.1385**	**0.8674**	**0.7490**	**1.1500e-003**		**0.0625**	**0.0625**		**0.0612**	**0.0612**	**0.0000**	**96.6794**	**96.6794**	**0.0140**	**0.0000**	**96.9741**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0126	0.0970	0.1479	2.6000e-004	6.9600e-003	1.3800e-003	8.3400e-003	1.9900e-003	1.2700e-003	3.2600e-003	0.0000	22.8871	22.8871	1.8000e-004	0.0000	22.8908
Worker	0.0180	0.0268	0.2591	5.8000e-004	0.0492	3.8000e-004	0.0496	0.0131	3.5000e-004	0.0134	0.0000	42.7054	42.7054	2.2500e-003	0.0000	42.7525
Total	**0.0305**	**0.1237**	**0.4070**	**8.4000e-004**	**0.0561**	**1.7600e-003**	**0.0579**	**0.0151**	**1.6200e-003**	**0.0167**	**0.0000**	**65.5925**	**65.5925**	**2.4300e-003**	**0.0000**	**65.6433**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0724	0.6053	0.7701	1.1500e-003		0.0430	0.0430		0.0430	0.0430	0.0000	96.6793	96.6793	0.0140	0.0000	96.9740
Total	**0.0724**	**0.6053**	**0.7701**	**1.1500e-003**		**0.0430**	**0.0430**		**0.0430**	**0.0430**	**0.0000**	**96.6793**	**96.6793**	**0.0140**	**0.0000**	**96.9740**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0126	0.0970	0.1479	2.6000e-004	6.5100e-003	1.3800e-003	7.8900e-003	1.8800e-003	1.2700e-003	3.1500e-003	0.0000	22.8871	22.8871	1.8000e-004	0.0000	22.8908
Worker	0.0180	0.0268	0.2591	5.8000e-004	0.0453	3.8000e-004	0.0457	0.0121	3.5000e-004	0.0125	0.0000	42.7054	42.7054	2.2500e-003	0.0000	42.7525
Total	**0.0305**	**0.1237**	**0.4070**	**8.4000e-004**	**0.0519**	**1.7600e-003**	**0.0536**	**0.0140**	**1.6200e-003**	**0.0156**	**0.0000**	**65.5925**	**65.5925**	**2.4300e-003**	**0.0000**	**65.6433**

3.7 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8308					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.3200e-003	0.0219	0.0187	3.0000e-005		1.7300e-003	1.7300e-003		1.7300e-003	1.7300e-003	0.0000	2.5533	2.5533	2.7000e-004	0.0000	2.5589
Total	**0.8341**	**0.0219**	**0.0187**	**3.0000e-005**		**1.7300e-003**	**1.7300e-003**		**1.7300e-003**	**1.7300e-003**	**0.0000**	**2.5533**	**2.5533**	**2.7000e-004**	**0.0000**	**2.5589**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	2.5000e-004	2.4000e-003	1.0000e-005	4.6000e-004	0.0000	4.6000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3954	0.3954	2.0000e-005	0.0000	0.3959
Total	**1.7000e-004**	**2.5000e-004**	**2.4000e-003**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**4.6000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.3954**	**0.3954**	**2.0000e-005**	**0.0000**	**0.3959**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.8308					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.9000e-004	0.0136	0.0183	3.0000e-005		9.5000e-004	9.5000e-004		9.5000e-004	9.5000e-004	0.0000	2.5533	2.5533	2.7000e-004	0.0000	2.5589
Total	**0.8314**	**0.0136**	**0.0183**	**3.0000e-005**		**9.5000e-004**	**9.5000e-004**		**9.5000e-004**	**9.5000e-004**	**0.0000**	**2.5533**	**2.5533**	**2.7000e-004**	**0.0000**	**2.5589**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	2.5000e-004	2.4000e-003	1.0000e-005	4.2000e-004	0.0000	4.2000e-004	1.1000e-004	0.0000	1.2000e-004	0.0000	0.3954	0.3954	2.0000e-005	0.0000	0.3959
Total	**1.7000e-004**	**2.5000e-004**	**2.4000e-003**	**1.0000e-005**	**4.2000e-004**	**0.0000**	**4.2000e-004**	**1.1000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.3954**	**0.3954**	**2.0000e-005**	**0.0000**	**0.3959**

3.8 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0128	0.1195	0.0836	1.1000e-004		8.8500e-003	8.8500e-003		8.1400e-003	8.1400e-003	0.0000	10.1373	10.1373	3.1100e-003	0.0000	10.2025
Paving	4.8100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0176**	**0.1195**	**0.0836**	**1.1000e-004**		**8.8500e-003**	**8.8500e-003**		**8.1400e-003**	**8.1400e-003**	**0.0000**	**10.1373**	**10.1373**	**3.1100e-003**	**0.0000**	**10.2025**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.7000e-004	6.7400e-003	0.0103	2.0000e-005	4.8000e-004	1.0000e-004	5.8000e-004	1.4000e-004	9.0000e-005	2.3000e-004	0.0000	1.5894	1.5894	1.0000e-005	0.0000	1.5896
Worker	3.7000e-004	5.6000e-004	5.4000e-003	1.0000e-005	1.0200e-003	1.0000e-005	1.0300e-003	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	0.8897	0.8897	5.0000e-005	0.0000	0.8907
Total	**1.2400e-003**	**7.3000e-003**	**0.0157**	**3.0000e-005**	**1.5000e-003**	**1.1000e-004**	**1.6100e-003**	**4.1000e-004**	**1.0000e-004**	**5.1000e-004**	**0.0000**	**2.4791**	**2.4791**	**6.0000e-005**	**0.0000**	**2.4803**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.6800e-003	0.0613	0.0827	1.1000e-004		4.2900e-003	4.2900e-003		4.2900e-003	4.2900e-003	0.0000	10.1373	10.1373	3.1100e-003	0.0000	10.2025
Paving	4.8100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.4900e-003**	**0.0613**	**0.0827**	**1.1000e-004**		**4.2900e-003**	**4.2900e-003**		**4.2900e-003**	**4.2900e-003**	**0.0000**	**10.1373**	**10.1373**	**3.1100e-003**	**0.0000**	**10.2025**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.7000e-004	6.7400e-003	0.0103	2.0000e-005	4.5000e-004	1.0000e-004	5.5000e-004	1.3000e-004	9.0000e-005	2.2000e-004	0.0000	1.5894	1.5894	1.0000e-005	0.0000	1.5896
Worker	3.7000e-004	5.6000e-004	5.4000e-003	1.0000e-005	9.4000e-004	1.0000e-005	9.5000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	0.8897	0.8897	5.0000e-005	0.0000	0.8907
Total	**1.2400e-003**	**7.3000e-003**	**0.0157**	**3.0000e-005**	**1.3900e-003**	**1.1000e-004**	**1.5000e-003**	**3.8000e-004**	**1.0000e-004**	**4.8000e-004**	**0.0000**	**2.4791**	**2.4791**	**6.0000e-005**	**0.0000**	**2.4803**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8961	0.7754	7.3346	0.0135	1.1125	0.0106	1.1231	0.2960	9.7700e-003	0.3058	0.0000	987.6200	987.6200	0.0491	0.0000	988.6517
Unmitigated	0.8961	0.7754	7.3346	0.0135	1.1125	0.0106	1.1231	0.2960	9.7700e-003	0.3058	0.0000	987.6200	987.6200	0.0491	0.0000	988.6517

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	730.88	3,459.11	3459.11	1,236,997	1,236,997
Parking Lot	0.00	0.00	0.00		
Single Family Housing	492.80	473.00	473.00	1,790,932	1,790,932
Total	1,223.68	3,932.11	3,932.11	3,027,929	3,027,929

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	2.25	2.25	2.25	33.00	48.00	19.00	100	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Single Family Housing	10.10	10.10	10.10	26.10	29.10	44.80	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.659809	0.081352	0.220861	0.020000	0.004585	0.000612	0.001236	0.002702	0.000155	0.000187	0.007978	0.000265	0.000259

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	130.3151	130.3151	5.8900e-003	1.2200e-003	130.8168
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	131.4947	131.4947	5.9500e-003	1.2300e-003	132.0009
NaturalGas Mitigated	6.6300e-003	0.0566	0.0241	3.6000e-004		4.5800e-003	4.5800e-003		4.5800e-003	4.5800e-003	0.0000	65.5832	65.5832	1.2600e-003	1.2000e-003	65.9824
NaturalGas Unmitigated	8.3700e-003	0.0715	0.0304	4.6000e-004		5.7800e-003	5.7800e-003		5.7800e-003	5.7800e-003	0.0000	82.8447	82.8447	1.5900e-003	1.5200e-003	83.3488

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.55245e+006	8.3700e-003	0.0715	0.0304	4.6000e-004		5.7800e-003	5.7800e-003		5.7800e-003	5.7800e-003	0.0000	82.8447	82.8447	1.5900e-003	1.5200e-003	83.3488
Total		**8.3700e-003**	**0.0715**	**0.0304**	**4.6000e-004**		**5.7800e-003**	**5.7800e-003**		**5.7800e-003**	**5.7800e-003**	**0.0000**	**82.8447**	**82.8447**	**1.5900e-003**	**1.5200e-003**	**83.3488**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.22898e+006	6.6300e-003	0.0566	0.0241	3.6000e-004		4.5800e-003	4.5800e-003		4.5800e-003	4.5800e-003	0.0000	65.5832	65.5832	1.2600e-003	1.2000e-003	65.9824
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**6.6300e-003**	**0.0566**	**0.0241**	**3.6000e-004**		**4.5800e-003**	**4.5800e-003**		**4.5800e-003**	**4.5800e-003**	**0.0000**	**65.5832**	**65.5832**	**1.2600e-003**	**1.2000e-003**	**65.9824**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	140800	40.9603	1.8500e-003	3.8000e-004	41.1180
Single Family Housing	311209	90.5344	4.0900e-003	8.5000e-004	90.8829
Total		**131.4947**	**5.9400e-003**	**1.2300e-003**	**132.0009**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	140800	40.9603	1.8500e-003	3.8000e-004	41.1180
Single Family Housing	307155	89.3548	4.0400e-003	8.4000e-004	89.6988
Total		**130.3151**	**5.8900e-003**	**1.2200e-003**	**130.8168**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.5513	3.8600e-003	0.3316	2.0000e-005		2.0100e-003	2.0100e-003		2.0100e-003	2.0100e-003	0.0000	3.6383	3.6383	6.0000e-004	6.0000e-005	3.6686
Unmitigated	3.5513	3.8600e-003	0.3316	2.0000e-005		2.0100e-003	2.0100e-003		2.0100e-003	2.0100e-003	0.0000	3.6383	3.6383	6.0000e-004	6.0000e-005	3.6686

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0831					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.4575					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	3.1000e-004	0.0000	2.0000e-005	0.0000		2.2000e-004	2.2000e-004		2.1000e-004	2.1000e-004	0.0000	3.1015	3.1015	6.0000e-005	6.0000e-005	3.1204
Landscaping	0.0104	3.8600e-003	0.3316	2.0000e-005		1.8000e-003	1.8000e-003		1.8000e-003	1.8000e-003	0.0000	0.5368	0.5368	5.4000e-004	0.0000	0.5482
Total	**3.5513**	**3.8600e-003**	**0.3317**	**2.0000e-005**		**2.0200e-003**	**2.0200e-003**		**2.0100e-003**	**2.0100e-003**	**0.0000**	**3.6383**	**3.6383**	**6.0000e-004**	**6.0000e-005**	**3.6686**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0831					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.4575					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	3.1000e-004	0.0000	2.0000e-005	0.0000		2.2000e-004	2.2000e-004		2.1000e-004	2.1000e-004	0.0000	3.1015	3.1015	6.0000e-005	6.0000e-005	3.1204
Landscaping	0.0104	3.8600e-003	0.3316	2.0000e-005		1.8000e-003	1.8000e-003		1.8000e-003	1.8000e-003	0.0000	0.5368	0.5368	5.4000e-004	0.0000	0.5482
Total	**3.5513**	**3.8600e-003**	**0.3317**	**2.0000e-005**		**2.0200e-003**	**2.0200e-003**		**2.0100e-003**	**2.0100e-003**	**0.0000**	**3.6383**	**3.6383**	**6.0000e-004**	**6.0000e-005**	**3.6686**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	22.1546	3.7400e-003	1.9600e-003	22.8411
Unmitigated	24.4119	4.5500e-003	2.4200e-003	25.2591

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 16.7403	17.0448	7.7000e-004	1.6000e-004	17.1104
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	2.86678 / 1.80732	7.3671	3.7800e-003	2.2700e-003	8.1487
Total		**24.4119**	**4.5500e-003**	**2.4300e-003**	**25.2591**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 15.7192	16.0051	7.2000e-004	1.5000e-004	16.0667
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	2.29342 / 1.69707	6.1495	3.0200e-003	1.8100e-003	6.7744
Total		**22.1546**	**3.7400e-003**	**1.9600e-003**	**22.8411**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	10.5616	0.6242	0.0000	23.6693
Unmitigated	10.5616	0.6242	0.0000	23.6693

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	1.21	0.2456	0.0145	0.0000	0.5505
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	50.82	10.3160	0.6097	0.0000	23.1188
Total		**10.5616**	**0.6242**	**0.0000**	**23.6693**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	1.21	0.2456	0.0145	0.0000	0.5505
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	50.82	10.3160	0.6097	0.0000	23.1188
Total		**10.5616**	**0.6242**	**0.0000**	**23.6693**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Appendix

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Appendix B. ISCST3 Model Output Files

Appendix

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Construction/Operation - CalEEMod Land Use Inputs - The Homes at Deer Hill

All Information provided by Applicant, unless otherwise specified.

Type	Land Use Unit Amount	Land Use Size Metric	Lot Acreage	Land Use Square Feet	Population/ Employment[1]	Comments
Single Family Housing	44	Units	4.55	113,275	121	Acreage based on Lot Size 4,500 SF
Park/Open Space	14.05	Acres	14.05	612,081		
Parking Lot	160	1000SF	3.67	160,000		Includes concrete and driveways
Total			22.27		121	

Source

1 Based on a population of 2.74 person per household (US Census 2010)

Project Location:	Contra Costa County
Climate Zone:	4
Operation Year:	2017
Land Use Setting:	Urban
Utility Company:	PG&E

	2008	2020
Procurement status:	12.4%	33%
	Carbon Intensity lbs/Mwh	
CO_2	641.35	490.53
CH_4	0.029	0.029
N_2O	0.011	0.011

Notes: 2008 carbon intensity based on CalEEMod defaults. The 2008 PG&E procurement status is based on the California Public Utility Commission's Procurement Summary. PG&E is on track to achieving the 33% RPS by 2020. It should be noted that PG&E projects a carbon intensity of 290 lbs/MWh based on PG&E's GHG Emission Factors Guidance: http://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf.

Demolition

	Building SQFT	Tons	Comments
Building Debris: Single-Family/Office	5,000	230	*(see Demo Haul Trip Calculation Worksheet)*
Asphalt/Concrete Debris: Paved Surfaces	27,000	203	*(see Demo Haul Trip Calculation Worksheet)*
Total Demolition Volume		**433**	**Tons**
Haul Trips		**57**	**Trips** Based on 12 CY's of debris per truck (*see Demo Haul Trip Worksheet*)

,ˇ¸ß£¹#,°æø¹£¸ˇ			Comments
Keller Canyon Landfill	15.7	miles	
C&D Recycling Facility	25.6	miles	*Lafayette Municipal Code (Ch 5-6) requires C&D recycling (50% diversion rate).*
Average distance:	20.7	miles	

Soil Haul: Site Preparation

Soil Haul	Total (CY)	Haul Truck Capacity (CY)	Total Round Trips	Total Trip Ends
Soil Export:	**0**	12	0	0

Assuming site balanced; no grading information.

Construction/Operation - CalEEMod Land Use Inputs - The Homes at Deer Hill

Architectural Coating

*Non-Residential Architectural Coating**

Nonresidential Structures		Land use SF	CalEEMod Application Factor	Total Paintable Surface Area	Paintable Interior Area	Paintable Exterior Area
Park/Open Space		612,081	0	0	0	0
Parking Lot		160,000	0.06	9,600	0	9,600
	Total	*772,081*		*9,600*	*0*	*9,600*

*CalEEMod methodology calculates the paintable interior and exterior areas by multiplying the total paintable surface area by 75 and 25 percent, respectively. Architectural coatings for the parking lot/structure are based on CalEEMod methodology applied to a surface parking lot (i.e., striping), in which 6% of surface area is painted. No painting assumed for park/open space.

Fireplaces: Assumes 100% gas fireplaces for residences.

Energy: The new residential are 25 more efficient than the 2008 Standards under 2013 Building and Energy Efficiency Standards. Future cycle updates anticipated to be more efficient. For the purpose of modeling, buildings are assumed to be 25% more energy efficient than the 2008 standards in the CalEEMod program.

Water/Wastewater: CalEEMod Defaults
Waste: CalEEMod Defaults

Trip Generation and VMT *		Weekday[1] Daily Trips	Weekday[1] Daily Trip Rate	Weekend[2] Proportional Trip Rate	Weekend Daily Trips	Weekend Daily Trip Rate
Single Family Housing		493	11.20	ITE equation[3]	473	10.75
	Dog Park	265		5	1325	
	City Park	270		5	1350	
	Sports Field	196		4	784	
Park/Open Space Total		731	52.02		3459	246.2
	Total	1,224			3,932	

	Total Weekday VMT[1]	Average VMT/Trip
Residential	4,979	10.10
Recreation	1,645	2.25

Sources

1 Trip generation rates and VMT provided by TJKM Transportation Consultants (Trip Generation Survey, 2014).

2 Weekend trips for recreational park uses proportioned from Project weekday trips an assumed 5:1 ratio, based on recreation facility information received from the City of Lafayette and discussion with TJKM regarding weekend trip generation described in the ITE Manual. A weekend trip proportion of 4:1 was used for the sports field based on sports field usage information received from the City of Lafayette.

3 ITE Trip Generation Manual, 9th Edition, for Single-Family Detached Housing for Saturday Daily Trips (Ln(T)=0.93Ln(X)+2.64).

Construction Activities and Schedule Assumptions

Construction Activities	Construction Schedule		
	Start Date	End Date	Duration (Workday)
Phase	5/1/2015	10/30/2017	652
Demolition	5/1/2015	6/5/2015	26
Rough Grading	6/6/2015	9/4/2015	65
Pad Finish	9/5/2015	9/18/2015	10
Fine Grading/Baserock	9/19/2015	10/30/2015	30
Building Construction	10/31/2015	10/30/2017	521
Paving	10/10/2017	10/30/2017	15
Architectural Coating	10/3/2017	10/30/2017	20

Notes: Construction activities are based on the preliminary information at the time of the analysis. Because detailed information on construction phasing and equipment use is not available, the analysis is based on the default construction schedule identified in CalEEMod. The CalEEMod phasing for the proposed Project is based on the Project land use characteristics and acreage disturbed during Phase 1 and Phase 2 construction activities. No overlap being Phase 1 and Phase 2 of construction is assumed.

Construction Activities	Annual Construction Days per Phase		
	Start Date	End Date	Duration (Workday)
2015	5/1/2015	12/31/2015	175
2016	1/1/2016	12/31/2016	261
2017	1/1/2017	10/30/2017	216

CALEEMOD-2013 EQUIPMENT

* CalEEMod defaults will be used where preliminary information is not available

	Constuction Fleet Mix			Homes at Deer Hill			Dog Park			
Equipment	#	hp	hours/ day	#	hp	hrs/ day	#	hp	hrs/ day	Notes:
Demolition				SAME - 1 month			SAME CREW ADD 5 DAYS			
Concrete/Industrial Saw	1	81	8	1	81	8				Note: Haul trips included on Demo-Grading Tab
Excavators	3	162	8	3	162	8				
Rubber Tired Dozers	2	255	8	1	436	8				Dozer D9
Rubber Tired Dozers				1	600	8				Dozer D10
Water Trucks				1	n/a	n/a				Note: CalEEMod treats these as Vendor Trips (4 trips/truck)
Workers	15			15						
Vendors	0			0						
Rough Grading				From BKF - 10 weeks			SAME CREW ADD 15 DAYS			
Excavators	2	162	8							
Grader	1	174	8	1	180	8				Grader 14G
Roller (Compactors)				1	232	8				Compactor Engine 815
Roller (Compactors)				1	354	8				Compactor Engine 825
Rubber Tired Dozers	1	255	8	2	436	8				Dozers D9
Rubber Tired Dozers				1	600	8				Dozer D10
Scrapers	2	361	8	3	407	8				Scraper Engines 627
Scrapers				3	500	8				Scraper Engines 637
Tractor/Loader/Backhoe	2	97	8							
Water Trucks	1	n/a	n/a	3	n/a	n/a				Note: CalEEMod treats these as Vendor Trips
Workers	20			20						
Vendors	0			0						
Pad Finish				From BKF - 2 weeks			Not Applicable			
Roller				1	84	8				
Scrapers				1	500	8				Scraper Engine 637
Rubber Tired Dozers				1	436	8				Dozer D9
Water Trucks				1	n/a	n/a				Note: CalEEMod treats these as Vendor Trips
Workers				8						
Vendors				0						
Fine Grade and Baserock				From BKF - 5 weeks			SAME CREW ADD 5 DAYS			
Grader				1	180	8				Grader 14G
Roller				2	84	8				
Scrapers				1	187	8				Scraper Engine 613
Scrapers				1	407	8				Scraper Engine 623
Tractor/Loader/Backhoe				1	97	8				Loader
Water Trucks				1	n/a	n/a				Note: CalEEMod treats these as Vendor Trips
Workers				15						
Vendors				0						
Building				From BKF - 2 years			SAME CREW ADD 0 DAYS			
Crane	1	226	7	0						
Forklifts	3	89	8	1	89	8				
Generator Set	1	84	8	1	84	8				
Tractor/Loader/Backhoe	3	97	7							
Welders	1	46	8	1	46	8				
Workers	227			50						
Vendors	34			10						
Paving				From BKF - 3 weeks			SAME CREW ADD 0 DAYS			
Paver	2	89	8	1	89	8				
Paving Equipment	2	82	8							
Roller	2	84	8	3	84	8				
Tractor/Loader/Backhoe	4	97	8	1	97	8				Loader
Workers	15			15						
Vendors	0			10						Assumes same vendor trips as building construction phase
Painting				From BKF			SAME CREW ADD 0 DAYS			Phase duration not provided; thus, based on model defaults
Air Compressors	1	78	6	1	78	6				
Workers	45			5						
Vendors	0			0						

Pavement Volume to Weight Conversion

Location	Total SF of Parking Lot	Assumed Thickness (foot)[1]	Parking Debris Volume (cu. ft)	Weight of Crushed Asphalt (lbs/cf)[2]	AC Mass (lbs)	AC Mass (tons)
Surface Lots	27,000	0.33	9000	45	405,000	202.50

[1] *Pavements and Surface Materials* . Nonpoint Education for Municipal Officials, Technical Paper Number 8. University of Conneticut Cooperative Extension System, 1999.

[2] http://www.reade.com/Particle_Briefings/spec_gra2.html

Demo Haul Trip Calculation

Conversion factors [1]

0.046	ton/SF	<<---CalEEMod Appendix A
1.2641662	tons/cy	<<---CalEEMod Appendix A

Building Demoltion Haul Trips (BSF and Haul Truck (CY) given)

Phase	BSF Demo	Tons/SF	Tons	Haul Truck (CY)	Haul Truck (Ton)	Round Trips	Total Trip Ends
Total	5,000	0.046	230	12	15.17	15	30

Asphalt Demo Haul Trips (Asphalt in SF and Haul Truck in CY given)

Phase	Tons	Haul Truck (CY)	Haul Truck (Ton)	Round Trips	Total Trip Ends
Total	203	12	15.17	13	27

[1] CalEEMod User's Guide Version 2013.2.2, Appendix A

Criteria Air Pollutant Emissions Summary - Construction

Average Annual Emissions

tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total Unmitigated	2.11	12.79	9.14	0.01	0.92	0.60	1.52	0.40	0.56	0.96
Total Mitigated	1.31	5.61	7.36	0.01	0.48	0.26	0.74	0.19	0.26	0.45

Average Annual Emissions - Unmitigated

tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
2015	0.86	10.36	6.41	0.01	0.80	0.44	1.23	0.36	0.40	0.77
2016	0.23	1.29	1.46	0.00	0.07	0.09	0.15	0.02	0.08	0.10
2017	1.02	1.14	1.28	0.00	0.06	0.07	0.13	0.02	0.07	0.09

Average Annual Emissions - Mitigated with Best Control Measures for Fugitive Dust and Tier 3 Engines for Equipment 50 HP or greater

tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
2015	0.23	3.89	4.59	0.01	0.36	0.15	0.51	0.16	0.15	0.31
2016	0.14	0.91	1.48	0.00	0.07	0.06	0.12	0.02	0.06	0.07
2017	0.94	0.81	1.30	0.00	0.06	0.05	0.11	0.02	0.05	0.07

FOR CONSTRUCTION HRA - Unmitigated Run

tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
2015 On-site	0.84	10.25	6.15	0.01	0.77	0.43	1.21	0.36	0.40	0.76
2015 Off-site	0.02	0.11	0.26	0.00	0.03	0.00	0.03	0.01	0.00	0.01
2016 On-site	0.19	1.12	0.92	0.00	0.00	0.08	0.08	0.00	0.08	0.08
2016 Off-site	0.04	0.17	0.54	0.00	0.07	0.00	0.07	0.02	0.00	0.02
2017 On-site	0.99	1.01	0.85	0.00	0.00	0.07	0.07	0.00	0.07	0.07
2017 Off-site	0.03	0.13	0.43	0.00	0.06	0.00	0.06	0.02	0.00	0.02

FOR CONSTRUCTION HRA - Mitigated Run with Best Control Measures for Fugitive Dust and Tier 3 Engines for Equipment 50 HP or greater

tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
2015 On-site	0.21	3.78	4.33	0.01	0.33	0.15	0.48	0.15	0.15	0.30
2015 Off-site	0.02	0.11	0.26	0.00	0.03	0.00	0.03	0.01	0.00	0.01
2016 On-site	0.10	0.74	0.94	0.00	0.00	0.05	0.05	0.00	0.05	0.05
2016 Off-site	0.04	0.17	0.54	0.00	0.07	0.00	0.07	0.02	0.00	0.02
2017 On-site	0.91	0.68	0.87	0.00	0.00	0.05	0.05	0.00	0.05	0.05
2017 Off-site	0.03	0.13	0.43	0.00	0.06	0.00	0.06	0.02	0.00	0.02

Criteria Air Pollutant Emissions Summary - Construction

Demolition - 2015

Unmitigated Construction

Category tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.08	0.97	0.58	0.00		0.04	0.04		0.04	0.04
Hauling	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.08	0.99	0.61	0.00	0.01	0.04	0.05	0.00	0.04	0.04
TOTAL ONSITE	**0.08**	**0.97**	**0.58**	**0.00**	**0.00**	**0.04**	**0.05**	**0.00**	**0.04**	**0.04**
TOTAL OFFSITE	**0.00**	**0.02**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated Construction

Category tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.36	0.45	0.00		0.02	0.02		0.02	0.02
Hauling	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.02	0.37	0.48	0.00	0.00	0.02	0.02	0.00	0.02	0.02
TOTAL ONSITE MIT	**0.02**	**0.36**	**0.45**	**0.00**	**0.00**	**0.02**	**0.02**	**0.00**	**0.02**	**0.02**
TOTAL OFFSITE MIT	**0.00**	**0.02**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Rough Grading - 2015

Unmitigated Construction

Category tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust					0.71	0.00	0.71	0.34	0.00	0.34
Off-Road	0.63	8.02	4.83	0.01		0.33	0.33		0.30	0.30
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.04	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Total	0.64	8.07	4.93	0.01	0.72	0.33	1.04	0.34	0.30	0.64
TOTAL ONSITE	**0.63**	**8.02**	**4.83**	**0.01**	**0.71**	**0.33**	**1.03**	**0.34**	**0.30**	**0.64**
TOTAL OFFSITE	**0.01**	**0.05**	**0.10**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**

Mitigated Construction

Category tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust					0.30	0.00	0.30	0.14	0.00	0.14
Off-Road	0.15	2.91	3.27	0.01		0.11	0.11		0.11	0.11
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.01	0.04	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Total	0.16	2.96	3.37	0.01	0.31	0.11	0.42	0.15	0.11	0.26
TOTAL ONSITE MIT	**0.15**	**2.91**	**3.27**	**0.01**	**0.30**	**0.11**	**0.41**	**0.14**	**0.11**	**0.25**
TOTAL OFFSITE MIT	**0.01**	**0.05**	**0.10**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**

Criteria Air Pollutant Emissions Summary - Construction

Pad Finish - 2015

Unmitigated Construction

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust						0.04	0.00	0.04	0.02	0.00	0.02
Off-Road		0.02	0.27	0.18	0.00		0.01	0.01		0.01	0.01
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.02	0.27	0.19	0.00	0.04	0.01	0.05	0.02	0.01	0.03
TOTAL ONSITE		**0.02**	**0.27**	**0.18**	**0.00**	**0.04**	**0.01**	**0.05**	**0.02**	**0.01**	**0.03**
TOTAL OFFSITE		**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated Construction

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust						0.02	0.00	0.02	0.01	0.00	0.01
Off-Road		0.00	0.09	0.11	0.00		0.00	0.00		0.00	0.00
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.01	0.10	0.11	0.00	0.02	0.00	0.02	0.01	0.00	0.01
TOTAL ONSITE MIT		**0.00**	**0.09**	**0.11**	**0.00**	**0.02**	**0.00**	**0.02**	**0.01**	**0.00**	**0.01**
TOTAL OFFSITE MIT		**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Fine Grading/Baserock - 2015

Unmitigated Construction

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust						0.02	0.00	0.02	0.00	0.00	0.00
Off-Road		0.07	0.79	0.40	0.00		0.04	0.04		0.03	0.03
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.07	0.80	0.42	0.00	0.03	0.04	0.06	0.00	0.03	0.04
TOTAL ONSITE		**0.07**	**0.79**	**0.40**	**0.00**	**0.02**	**0.04**	**0.06**	**0.00**	**0.03**	**0.04**
TOTAL OFFSITE		**0.00**	**0.01**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated Construction

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust						0.01	0.00	0.01	0.00	0.00	0.00
Off-Road		0.01	0.29	0.34	0.00		0.01	0.01		0.01	0.01
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.02	0.30	0.37	0.00	0.01	0.01	0.03	0.00	0.01	0.02
TOTAL ONSITE MIT		**0.01**	**0.29**	**0.34**	**0.00**	**0.01**	**0.01**	**0.02**	**0.00**	**0.01**	**0.01**
TOTAL OFFSITE MIT		**0.00**	**0.01**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Criteria Air Pollutant Emissions Summary - Construction

Building Construction - 2015

Unmitigated Construction

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.03	0.20	0.16	0.00		0.02	0.02		0.02	0.02
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.01	0.07	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Total		0.04	0.23	0.26	0.00	0.01	0.02	0.03	0.00	0.02	0.02
TOTAL ONSITE		**0.03**	**0.20**	**0.16**	**0.00**	**0.00**	**0.02**	**0.02**	**0.00**	**0.02**	**0.02**
TOTAL OFFSITE		**0.01**	**0.03**	**0.10**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**

Mitigated Construction

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.02	0.13	0.16	0.00		0.01	0.01		0.01	0.01
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.01	0.07	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Total		0.03	0.16	0.26	0.00	0.01	0.01	0.02	0.00	0.01	0.01
TOTAL ONSITE MIT		**0.02**	**0.13**	**0.16**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**
TOTAL OFFSITE MIT		**0.01**	**0.03**	**0.10**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**

Building Construction - 2016

Unmitigated Construction

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.19	1.12	0.92	0.00		0.08	0.08		0.08	0.08
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.02	0.13	0.19	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Worker		0.02	0.04	0.35	0.00	0.06	0.00	0.06	0.02	0.00	0.02
Total		0.23	1.29	1.46	0.00	0.07	0.09	0.15	0.02	0.08	0.10
TOTAL ONSITE		**0.19**	**1.12**	**0.92**	**0.00**	**0.00**	**0.08**	**0.08**	**0.00**	**0.08**	**0.08**
TOTAL OFFSITE		**0.04**	**0.17**	**0.54**	**0.00**	**0.07**	**0.00**	**0.07**	**0.02**	**0.00**	**0.02**

Mitigated Construction

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.10	0.74	0.94	0.00		0.05	0.05		0.05	0.05
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.02	0.13	0.19	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Worker		0.02	0.04	0.35	0.00	0.06	0.00	0.06	0.02	0.00	0.02
Total		0.14	0.91	1.48	0.00	0.07	0.06	0.12	0.02	0.06	0.07
TOTAL ONSITE MIT		**0.10**	**0.74**	**0.94**	**0.00**	**0.00**	**0.05**	**0.05**	**0.00**	**0.05**	**0.05**
TOTAL OFFSITE MIT		**0.04**	**0.17**	**0.54**	**0.00**	**0.07**	**0.00**	**0.07**	**0.02**	**0.00**	**0.02**

Criteria Air Pollutant Emissions Summary - Construction

Building Construction - 2017

Unmitigated Construction

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.14	0.87	0.75	0.00		0.06	0.06		0.06	0.06
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.01	0.10	0.15	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Worker		0.02	0.03	0.26	0.00	0.05	0.00	0.05	0.01	0.00	0.01
Total		0.17	0.99	1.16	0.00	0.06	0.06	0.12	0.02	0.06	0.08
TOTAL ONSITE		**0.14**	**0.87**	**0.75**	**0.00**	**0.00**	**0.06**	**0.06**	**0.00**	**0.06**	**0.06**
TOTAL OFFSITE		**0.03**	**0.12**	**0.41**	**0.00**	**0.06**	**0.00**	**0.06**	**0.02**	**0.00**	**0.02**

Mitigated Construction

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.07	0.61	0.77	0.00		0.04	0.04		0.04	0.04
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.01	0.10	0.15	0.00	0.01	0.00	0.01	0.00	0.00	0.00
Worker		0.02	0.03	0.26	0.00	0.05	0.00	0.05	0.01	0.00	0.01
Total		0.10	0.73	1.18	0.00	0.06	0.04	0.10	0.02	0.04	0.06
TOTAL ONSITE MIT		**0.07**	**0.61**	**0.77**	**0.00**	**0.00**	**0.04**	**0.04**	**0.00**	**0.04**	**0.04**
TOTAL OFFSITE MIT		**0.03**	**0.12**	**0.41**	**0.00**	**0.06**	**0.00**	**0.06**	**0.02**	**0.00**	**0.02**

Architectural Coating - 2017

Unmitigated Construction

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Arch. Coating		0.83					0.00	0.00		0.00	0.00
Off-Road		0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.83	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL ONSITE		**0.83**	**0.02**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
TOTAL OFFSITE		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated Construction

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Arch. Coating		0.83					0.00	0.00		0.00	0.00
Off-Road		0.00	0.01	0.02	0.00		0.00	0.00		0.00	0.00
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.83	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL ONSITE MIT		**0.83**	**0.01**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
TOTAL OFFSITE MIT		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Criteria Air Pollutant Emissions Summary - Construction

Paving - 2017

Unmitigated Construction

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.01	0.12	0.08	0.00		0.01	0.01		0.01	0.01
Paving		0.00					0.00	0.00		0.00	0.00
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.02	0.13	0.10	0.00	0.00	0.01	0.01	0.00	0.01	0.01
TOTAL ONSITE		**0.02**	**0.12**	**0.08**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**
TOTAL OFFSITE		**0.00**	**0.01**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated Construction

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.00	0.06	0.08	0.00		0.00	0.00		0.00	0.00
Paving		0.00					0.00	0.00		0.00	0.00
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.01	0.07	0.10	0.00	0.00	0.00	0.01	0.00	0.00	0.00
TOTAL ONSITE MIT		**0.01**	**0.06**	**0.08**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
TOTAL OFFSITE MIT		**0.00**	**0.01**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Average Daily Emission Calculations (lbs/day)

Criteria Air Pollutant Emissions Summary - Construction

Annual emissions divided by total construction duration to obtain average daily emissions. Average construction emissions accounts for the duration of each construction phase and the time each piece of construction equipment is onsite.

Annual Average Emissions

avg lbs/day	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total Unmitigated	6.46	39.22	28.04	0.04	2.83	1.83	4.67	1.22	1.72	2.94
Total Mitigated	4.01	17.20	22.58	0.04	1.48	0.80	2.28	0.59	0.80	1.39

Certified EIR - Terraces of Lafayette

UNMITIGATED SCENARIO	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Unmitigated Avg lbs/day	42	138	NA	NA	NA	6	NA	NA	6	NA
Change from Certified EIR	-36	-99	NA	NA	NA	-4	NA	NA	-4	NA

MITIGATED SCENARIO	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Mitigated Avg lbs/day	38	104	NA	NA	NA	5	NA	NA	5	NA
Change from Certified EIR	-34	-87	NA	NA	NA	-4	NA	NA	-4	NA

FOR CONSTRUCTION HRA - Unmitigated Run

Onsite Details

avg lbs/day	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
2015 Onsite	9.55	117.12	70.27	0.09	8.82	4.970	13.79	4.07	4.59	8.659
2016 Onsite	1.43	8.59	7.04	0.01	0.00	0.644	0.64	0.00	0.63	0.631
2017 Onsite	9.17	9.34	7.88	0.01	0.00	0.677	0.68	0.00	0.66	0.658

Offsite Details

avg lbs/day	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
2015 Offsite	0.24	1.25	2.94	0.00	0.29	0.020	0.31	0.08	0.02	0.096
2016 Offsite	0.31	1.28	4.14	0.01	0.52	0.018	0.54	0.14	0.02	0.156
2017 Offsite	0.30	1.22	3.94	0.01	0.54	0.017	0.56	0.14	0.02	0.160

FOR CONSTRUCTION HRA - Mitigated Run with Best Control Measures for Fugitive Dust and Tier 3 Engines for Equipment 50 HP or greater

Onsite Details

avg lbs/day	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
2015 Onsite	2.35	43.21	49.48	0.09	3.77	1.746	5.52	1.74	1.75	3.486
2016 Onsite	0.73	5.67	7.19	0.01	0.00	0.413	0.41	0.00	0.41	0.413
2017 Onsite	8.44	6.30	8.07	0.01	0.00	0.447	0.45	0.00	0.45	0.447

Offsite Details

avg lbs/day	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
2015 Offsite	0.24	1.25	2.94	0.00	0.29	0.020	0.31	0.08	0.02	0.096
2016 Offsite	0.31	1.28	4.14	0.01	0.52	0.018	0.54	0.14	0.02	0.156
2017 Offsite	0.30	1.22	3.94	0.01	0.54	0.017	0.56	0.14	0.02	0.160

BAAQMD Meteorological Site

Name: Concord
Site ID: 2903
Start Date: 9/20/1990
End Date: current
Operator: BAAQMD
Latitude: 37.9395
Longitude: 122.0296
Elevation: 23.6 m
Wind Height: 10 m
UTM - East: 585.266
UTM - North: 4199.546
County: Contra Costa
Sensors: ws,wd,temp
RH

Files for Downloading

Year	ASCII	ISCST3 300 m mixing height	ISCST3 600 m mixing height
2005	metdata2903-05met.zip	metdata2903-05300.zip	metdata2903-05600.zip
2004	metdata2903-04met.zip	metdata2903-04300.zip	metdata2903-04600.zip
2003	metdata2903-03met.zip	metdata2903-03300.zip	metdata2903-03600.zip
2002	metdata2903-02met.zip	metdata2903-02300.zip	metdata2903-02600.zip
2001	metdata2903-01met.zip	metdata2903-013ra.zip	metdata2903-016ra.zip
2000	metdata2903-00met.zip	metdata2903-003ra.zip	metdata2903-006ra.zip
1999	metdata2903-99met.zip	metdata2903-993ra.zip	metdata2903-996ra.zip
1998	metdata2903-98met.zip	metdata2903-98300.zip	metdata2903-98600.zip
1997	metdata2903-97met.zip	A	A
1996	metdata2903-96met.zip	metdata2903-96300.zip	metdata2903-96600.zip
1995	metdata2903-95met.zip	A	A
1994	metdata2903-94met.zip	metdata2903-94300.zip	metdata2903-94600.zip
1993	metdata2903-93met.zip	metdata2903-93300.zip	metdata2903-93600.zip
1992	metdata2903-92met.zip	A	A
1991	metdata2903-91met.zip	metdata2903-91300.zip	metdata2903-91600.zip

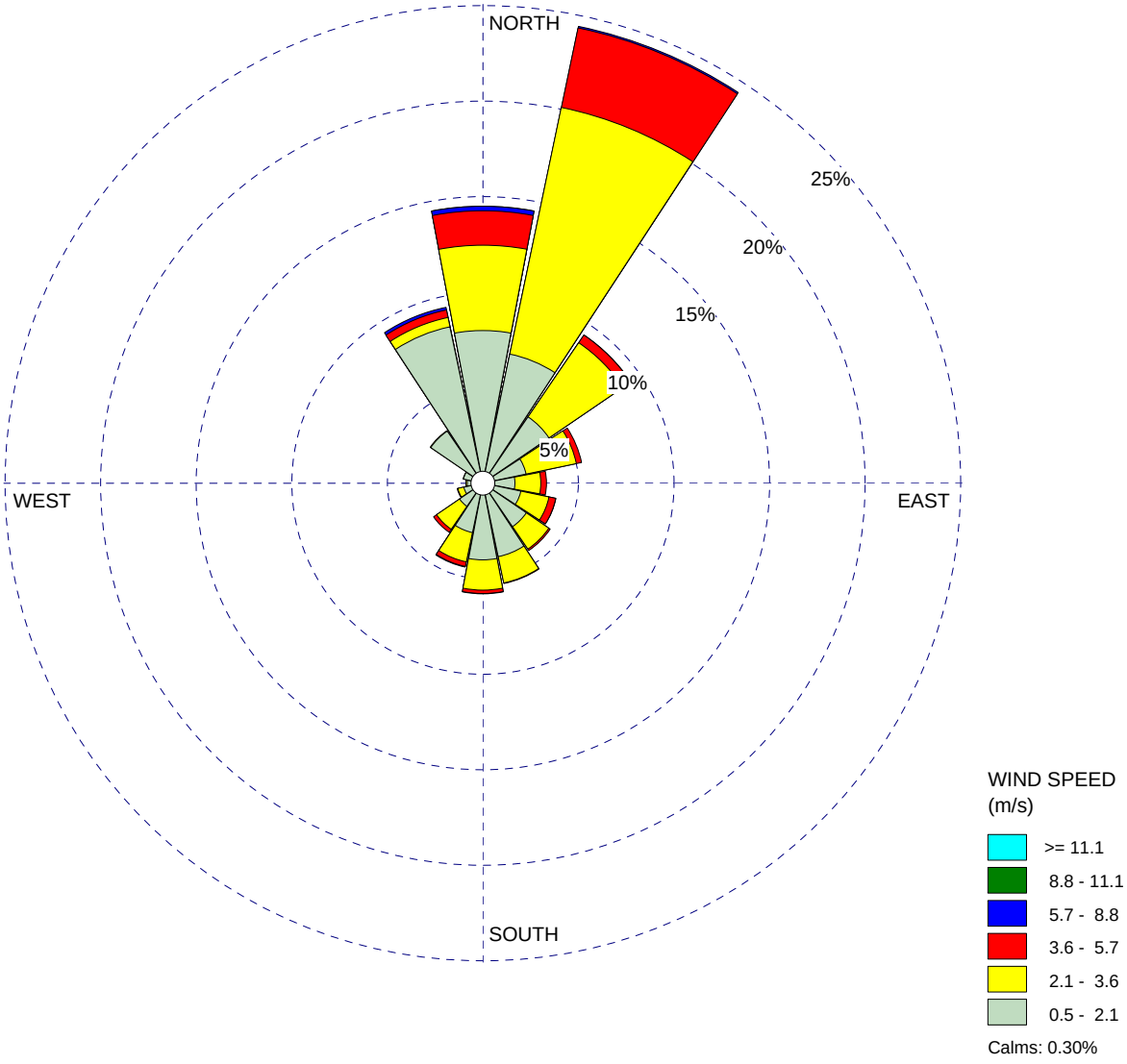
Note: An “A” instead of a filename for any given year in the ASCII column signifies the data are missing. An “A” in the ISCST3 columns indicates the data are either missing or do not meet the EPA 90% data capture rate required for regulatory modeling applications.

WIND ROSE PLOT:

Concord Monitoring Station
1/1/2003-12/31/2005

DISPLAY:

Wind Speed
Flow Vector (blowing to)



COMMENTS:	DATA PERIOD: **Start Date: 1/1/2003 - 00:00** **End Date: 12/31/2005 - 23:00**	COMPANY NAME:	
		MODELER:	
	CALM WINDS: **0.30%**	TOTAL COUNT: **26304 hrs.**	
	AVG. WIND SPEED: **2.11 m/s**	DATE: **8/11/2014**	PROJECT NO.: **CLAF-02.0**

Model Output
Unit Emission Rates 1 g/s

Results Summary

C:\!Projects\CLAF-02.0 - The Homes at Deer Hill\!Construction HRA\B
The Homes at Deer Hill - Construction

Concentration - Source Group: ALL

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		14.48923	ug/m^3	579339.88	4195307.00	98.07	0.00	0.00	

Concentration - Source Group: HAULING

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		9.84497	ug/m^3	579339.88	4195307.00	98.07	0.00	0.00	

Concentration - Source Group: ONSITE

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		6.10759	ug/m^3	578868.50	4194908.00	135.17	0.00	0.00	

Model Input
Unit Emission Rates 1 g/s

```
*** ISCST3 - VERSION 02035 ***    *** C:\!Projects\CLAF-02.0 - The Homes at Deer Hill\!Construction HRA\B  ***        09/05/14
                                   *** The Homes at Deer Hill - Construction                                 ***        09:28:53
**MODELOPTs:                                                                                                          PAGE   1
CONC                    URBAN ELEV  FLGPOL DFAULT

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

**Intermediate Terrain Processing is Selected

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

  --  SCAVENGING/DEPOSITION LOGIC --
**Model Uses NO DRY DEPLETION.  DDPLETE =  F
**Model Uses NO WET DEPLETION.  WDPLETE =  F
**NO WET SCAVENGING Data Provided.
**NO GAS DRY DEPOSITION Data Provided.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations

**Model Uses URBAN Dispersion.

**Model Uses Regulatory DEFAULT Options:
          1. Final Plume Rise.
          2. Stack-tip Downwash.
          3. Buoyancy-induced Dispersion.
          4. Use Calms Processing Routine.
          5. Not Use Missing Data Processing Routine.
          6. Default Wind Profile Exponents.
          7. Default Vertical Potential Temperature Gradients.
          8. "Upper Bound" Values for Supersquat Buildings.
          9. No Exponential Decay for URBAN/Non-SO2

**Model Accepts Receptors on ELEV Terrain.

**Model Accepts FLAGPOLE Receptor Heights.

**Model Calculates ANNUAL Averages Only

**This Run Includes:    97 Source(s);      3 Source Group(s); and     412 Receptor(s)

**The Model Assumes A Pollutant Type of:  OTHER

**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)

**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:  Anem. Hgt. (m) =    10.00 ;    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 =     1.4 MB of RAM.

**Input Runstream File:          deerhill.INP
**Output Print File:             deerhill.OUT
**Detailed Error/Message File:   deerhill.err
```

CONC URBAN ELEV FLGPOL DFAULT

*** 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)	EMISSION RATE SCALAR VARY BY
L0000001	0	0.10526E-01	579172.9	4195243.0	112.1	4.15	4.65	1.93	SHRDOW
L0000002	0	0.10526E-01	579178.6	4195251.5	112.3	4.15	4.65	1.93	SHRDOW
L0000003	0	0.10526E-01	579184.2	4195259.5	111.0	4.15	4.65	1.93	SHRDOW
L0000004	0	0.10526E-01	579189.8	4195268.0	108.6	4.15	4.65	1.93	SHRDOW
L0000005	0	0.10526E-01	579195.4	4195276.0	107.7	4.15	4.65	1.93	SHRDOW
L0000006	0	0.10526E-01	579201.1	4195284.5	107.4	4.15	4.65	1.93	SHRDOW
L0000007	0	0.10526E-01	579207.0	4195292.5	109.3	4.15	4.65	1.93	SHRDOW
L0000008	0	0.10526E-01	579215.8	4195297.0	108.9	4.15	4.65	1.93	SHRDOW
L0000009	0	0.10526E-01	579224.6	4195301.5	108.0	4.15	4.65	1.93	SHRDOW
L0000010	0	0.10526E-01	579233.4	4195306.5	107.9	4.15	4.65	1.93	SHRDOW
L0000011	0	0.10526E-01	579242.2	4195311.0	107.0	4.15	4.65	1.93	SHRDOW
L0000012	0	0.10526E-01	579251.1	4195316.0	104.9	4.15	4.65	1.93	SHRDOW
L0000013	0	0.10526E-01	579259.9	4195320.5	104.9	4.15	4.65	1.93	SHRDOW
L0000014	0	0.10526E-01	579268.8	4195325.0	104.2	4.15	4.65	1.93	SHRDOW
L0000015	0	0.10526E-01	579277.6	4195330.0	102.8	4.15	4.65	1.93	SHRDOW
L0000016	0	0.10526E-01	579286.4	4195334.5	101.4	4.15	4.65	1.93	SHRDOW
L0000017	0	0.10526E-01	579295.2	4195339.5	101.1	4.15	4.65	1.93	SHRDOW
L0000018	0	0.10526E-01	579303.9	4195343.5	100.4	4.15	4.65	1.93	SHRDOW
L0000019	0	0.10526E-01	579307.9	4195334.5	100.2	4.15	4.65	1.93	SHRDOW
L0000020	0	0.10526E-01	579312.0	4195325.0	99.7	4.15	4.65	1.93	SHRDOW
L0000021	0	0.10526E-01	579316.0	4195316.0	99.5	4.15	4.65	1.93	SHRDOW
L0000022	0	0.10526E-01	579320.1	4195307.0	99.1	4.15	4.65	1.93	SHRDOW
L0000023	0	0.10526E-01	579324.1	4195298.0	99.1	4.15	4.65	1.93	SHRDOW
L0000024	0	0.10526E-01	579328.1	4195288.5	99.9	4.15	4.65	1.93	SHRDOW
L0000025	0	0.10526E-01	579332.2	4195279.5	99.7	4.15	4.65	1.93	SHRDOW
L0000026	0	0.10526E-01	579336.2	4195270.5	99.4	4.15	4.65	1.93	SHRDOW
L0000027	0	0.10526E-01	579340.2	4195261.0	98.9	4.15	4.65	1.93	SHRDOW
L0000028	0	0.10526E-01	579344.3	4195252.0	99.3	4.15	4.65	1.93	SHRDOW
L0000029	0	0.10526E-01	579348.3	4195243.0	99.1	4.15	4.65	1.93	SHRDOW
L0000030	0	0.10526E-01	579352.4	4195233.5	99.3	4.15	4.65	1.93	SHRDOW
L0000031	0	0.10526E-01	579356.4	4195224.5	101.0	4.15	4.65	1.93	SHRDOW
L0000032	0	0.10526E-01	579360.4	4195215.5	100.8	4.15	4.65	1.93	SHRDOW
L0000033	0	0.10526E-01	579364.5	4195206.5	100.0	4.15	4.65	1.93	SHRDOW
L0000034	0	0.10526E-01	579368.5	4195197.0	100.3	4.15	4.65	1.93	SHRDOW
L0000035	0	0.10526E-01	579372.6	4195188.0	99.9	4.15	4.65	1.93	SHRDOW
L0000036	0	0.10526E-01	579376.5	4195179.0	99.4	4.15	4.65	1.93	SHRDOW
L0000037	0	0.10526E-01	579379.9	4195169.5	99.1	4.15	4.65	1.93	SHRDOW

L0000038	0	0.10526E-01	579383.3	4195160.0	98.9	4.15	4.65	1.93	SHRDOW
L0000039	0	0.10526E-01	579386.7	4195150.5	99.0	4.15	4.65	1.93	SHRDOW
L0000040	0	0.10526E-01	579390.1	4195141.0	97.5	4.15	4.65	1.93	SHRDOW
L0000041	0	0.10526E-01	579393.5	4195132.0	96.2	4.15	4.65	1.93	SHRDOW
L0000042	0	0.10526E-01	579396.9	4195122.5	96.0	4.15	4.65	1.93	SHRDOW
L0000043	0	0.10526E-01	579400.3	4195113.0	95.1	4.15	4.65	1.93	SHRDOW
L0000044	0	0.10526E-01	579403.8	4195103.5	94.9	4.15	4.65	1.93	SHRDOW
L0000045	0	0.10526E-01	579407.1	4195094.0	94.4	4.15	4.65	1.93	SHRDOW
L0000046	0	0.10526E-01	579410.6	4195085.0	94.3	4.15	4.65	1.93	SHRDOW
L0000047	0	0.10526E-01	579414.0	4195075.5	95.1	4.15	4.65	1.93	SHRDOW
L0000048	0	0.10526E-01	579417.4	4195066.0	95.0	4.15	4.65	1.93	SHRDOW
L0000049	0	0.10526E-01	579420.8	4195056.5	94.4	4.15	4.65	1.93	SHRDOW
L0000050	0	0.10526E-01	579424.2	4195047.0	93.8	4.15	4.65	1.93	SHRDOW
L0000051	0	0.10526E-01	579427.6	4195038.0	93.8	4.15	4.65	1.93	SHRDOW
L0000052	0	0.10526E-01	579431.0	4195028.5	93.1	4.15	4.65	1.93	SHRDOW
L0000053	0	0.10526E-01	579434.4	4195019.0	92.3	4.15	4.65	1.93	SHRDOW
L0000054	0	0.10526E-01	579437.8	4195009.5	91.6	4.15	4.65	1.93	SHRDOW
L0000055	0	0.10526E-01	579440.9	4195000.0	91.2	4.15	4.65	1.93	SHRDOW
L0000056	0	0.10526E-01	579444.1	4194990.5	91.4	4.15	4.65	1.93	SHRDOW
L0000057	0	0.10526E-01	579447.2	4194981.0	91.2	4.15	4.65	1.93	SHRDOW
L0000058	0	0.10526E-01	579450.3	4194971.5	90.9	4.15	4.65	1.93	SHRDOW
L0000059	0	0.10526E-01	579453.5	4194962.0	90.6	4.15	4.65	1.93	SHRDOW
L0000060	0	0.10526E-01	579456.6	4194952.5	90.6	4.15	4.65	1.93	SHRDOW
L0000061	0	0.10526E-01	579459.8	4194943.0	90.5	4.15	4.65	1.93	SHRDOW
L0000062	0	0.10526E-01	579462.9	4194933.5	90.3	4.15	4.65	1.93	SHRDOW
L0000063	0	0.10526E-01	579466.0	4194924.0	90.2	4.15	4.65	1.93	SHRDOW
L0000064	0	0.10526E-01	579469.1	4194914.5	90.1	4.15	4.65	1.93	SHRDOW
L0000065	0	0.10526E-01	579472.3	4194905.0	90.0	4.15	4.65	1.93	SHRDOW
L0000066	0	0.10526E-01	579475.4	4194895.5	90.0	4.15	4.65	1.93	SHRDOW
L0000067	0	0.10526E-01	579477.9	4194886.0	90.0	4.15	4.65	1.93	SHRDOW
L0000068	0	0.10526E-01	579480.3	4194876.0	89.6	4.15	4.65	1.93	SHRDOW
L0000069	0	0.10526E-01	579482.8	4194866.5	90.0	4.15	4.65	1.93	SHRDOW
L0000070	0	0.10526E-01	579485.1	4194857.0	90.2	4.15	4.65	1.93	SHRDOW
L0000071	0	0.10526E-01	579488.8	4194848.5	89.4	4.15	4.65	1.93	SHRDOW
L0000072	0	0.10526E-01	579498.8	4194849.0	87.7	4.15	4.65	1.93	SHRDOW
L0000073	0	0.10526E-01	579508.8	4194849.5	87.2	4.15	4.65	1.93	SHRDOW
L0000074	0	0.10526E-01	579518.8	4194850.0	89.2	4.15	4.65	1.93	SHRDOW
L0000075	0	0.10526E-01	579528.8	4194850.0	91.5	4.15	4.65	1.93	SHRDOW
L0000076	0	0.10526E-01	579538.8	4194850.5	91.9	4.15	4.65	1.93	SHRDOW
L0000077	0	0.10526E-01	579548.8	4194851.0	92.2	4.15	4.65	1.93	SHRDOW
L0000078	0	0.10526E-01	579558.7	4194851.5	92.2	4.15	4.65	1.93	SHRDOW
L0000079	0	0.10526E-01	579568.7	4194851.5	92.0	4.15	4.65	1.93	SHRDOW
L0000080	0	0.10526E-01	579578.7	4194852.0	92.5	4.15	4.65	1.93	SHRDOW

CONC URBAN ELEV FLGPOL DFAULT

*** 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)	EMISSION RATE SCALAR VARY BY
L0000081	0	0.10526E-01	579588.7	4194852.5	93.0	4.15	4.65	1.93	SHRDOW
L0000082	0	0.10526E-01	579598.7	4194853.0	93.0	4.15	4.65	1.93	SHRDOW
L0000083	0	0.10526E-01	579608.7	4194853.0	93.1	4.15	4.65	1.93	SHRDOW
L0000084	0	0.10526E-01	579618.7	4194853.5	93.1	4.15	4.65	1.93	SHRDOW
L0000085	0	0.10526E-01	579628.7	4194854.0	93.0	4.15	4.65	1.93	SHRDOW
L0000086	0	0.10526E-01	579638.7	4194854.5	93.0	4.15	4.65	1.93	SHRDOW
L0000087	0	0.10526E-01	579648.6	4194855.0	93.0	4.15	4.65	1.93	SHRDOW
L0000088	0	0.10526E-01	579658.6	4194855.0	93.0	4.15	4.65	1.93	SHRDOW
L0000089	0	0.10526E-01	579668.6	4194855.5	92.8	4.15	4.65	1.93	SHRDOW
L0000090	0	0.10526E-01	579678.6	4194856.0	93.5	4.15	4.65	1.93	SHRDOW
L0000091	0	0.10526E-01	579688.6	4194856.5	93.9	4.15	4.65	1.93	SHRDOW
L0000092	0	0.10526E-01	579698.6	4194856.5	93.4	4.15	4.65	1.93	SHRDOW
L0000093	0	0.10526E-01	579708.6	4194857.0	93.6	4.15	4.65	1.93	SHRDOW
L0000094	0	0.10526E-01	579718.6	4194857.5	93.9	4.15	4.65	1.93	SHRDOW
L0000095	0	0.10526E-01	579728.6	4194858.0	93.7	4.15	4.65	1.93	SHRDOW

CONC URBAN ELEV FLGPOL DFAULT

*** 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)	EMISSION RATE SCALAR VARY BY
1	0	0.11240E-04	578928.2	4194837.5	109.0	4.15	19	1.93	SHRDOW
2	0	0.70180E-04	578944.0	4194874.0	119.4	4.15	9	1.93	SHRDOW

CONC URBAN ELEV FLGPOL DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY SEASONALLY, DIURNALLY AND BY DAY OF WEEK (SHRDOW) *

SOURCE ID = 1 ; SOURCE TYPE = AREAPOLY :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
							SEASON = WINTER; 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
							SEASON = SPRING; 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
							SEASON = SUMMER; 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
							SEASON = FALL ; 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
							SEASON = WINTER; 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
							SEASON = SPRING; 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
							SEASON = SUMMER; 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
							SEASON = FALL ; 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
							SEASON = WINTER; 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
							SEASON = SPRING; 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
							SEASON = SUMMER; 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

SEASON = FALL ; 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

CONC URBAN ELEV FLGPOL DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY SEASONALLY, DIURNALLY AND BY DAY OF WEEK (SHRDOW) *

SOURCE ID = 2 ; SOURCE TYPE = AREAPOLY :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
							SEASON = WINTER; 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
							SEASON = SPRING; 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
							SEASON = SUMMER; 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
							SEASON = FALL ; 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
							SEASON = WINTER; 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
							SEASON = SPRING; 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
							SEASON = SUMMER; 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
							SEASON = FALL ; 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
							SEASON = WINTER; 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
							SEASON = SPRING; 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
							SEASON = SUMMER; 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

SEASON = FALL ; 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

CONC URBAN ELEV FLGPOL DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY SEASONALLY, DIURNALLY AND BY DAY OF WEEK (SHRDOW) *

SOURCE ID = L0000001 through L0000095; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
						SEASON = WINTER; 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
						SEASON = SPRING; 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
						SEASON = SUMMER; 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
						SEASON = FALL ; 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
						SEASON = WINTER; 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
						SEASON = SPRING; 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
						SEASON = SUMMER; 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
						SEASON = FALL ; 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
						SEASON = WINTER; 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
						SEASON = SPRING; 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
						SEASON = SUMMER; 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

SEASON = FALL ; 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

CONC URBAN ELEV FLGPOL DFAULT

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

(579619.9,	4194947.0,	84.2,	1.5);	(579639.9,	4194947.0,	83.9,	1.5);
(579659.9,	4194947.0,	84.0,	1.5);	(579679.9,	4194947.0,	84.0,	1.5);
(579699.9,	4194947.0,	84.4,	1.5);	(579719.9,	4194947.0,	85.0,	1.5);
(579739.9,	4194947.0,	84.9,	1.5);	(579579.9,	4194967.0,	86.4,	1.5);
(579599.9,	4194967.0,	86.0,	1.5);	(579619.9,	4194967.0,	84.9,	1.5);
(579639.9,	4194967.0,	84.5,	1.5);	(579659.9,	4194967.0,	84.1,	1.5);
(579679.9,	4194967.0,	84.8,	1.5);	(579699.9,	4194967.0,	85.4,	1.5);
(579719.9,	4194967.0,	85.9,	1.5);	(579739.9,	4194967.0,	85.8,	1.5);
(579559.9,	4194987.0,	87.1,	1.5);	(579579.9,	4194987.0,	86.4,	1.5);
(579599.9,	4194987.0,	85.9,	1.5);	(579619.9,	4194987.0,	85.0,	1.5);
(579639.9,	4194987.0,	84.5,	1.5);	(579659.9,	4194987.0,	84.2,	1.5);
(579679.9,	4194987.0,	84.8,	1.5);	(579699.9,	4194987.0,	85.4,	1.5);
(579719.9,	4194987.0,	85.8,	1.5);	(579739.9,	4194987.0,	85.8,	1.5);
(579519.9,	4195007.0,	89.4,	1.5);	(579539.9,	4195007.0,	88.9,	1.5);
(579559.9,	4195007.0,	87.1,	1.5);	(579579.9,	4195007.0,	86.5,	1.5);
(579599.9,	4195007.0,	86.0,	1.5);	(579619.9,	4195007.0,	85.9,	1.5);
(579639.9,	4195007.0,	85.5,	1.5);	(579659.9,	4195007.0,	85.0,	1.5);
(579679.9,	4195007.0,	85.9,	1.5);	(579699.9,	4195007.0,	86.0,	1.5);
(579719.9,	4195007.0,	86.0,	1.5);	(579739.9,	4195007.0,	86.0,	1.5);
(579479.9,	4195027.0,	91.0,	1.5);	(579499.9,	4195027.0,	90.1,	1.5);
(579519.9,	4195027.0,	89.4,	1.5);	(579539.9,	4195027.0,	89.0,	1.5);
(579559.9,	4195027.0,	87.9,	1.5);	(579579.9,	4195027.0,	87.3,	1.5);
(579599.9,	4195027.0,	87.0,	1.5);	(579619.9,	4195027.0,	86.9,	1.5);
(579639.9,	4195027.0,	86.7,	1.5);	(579659.9,	4195027.0,	86.8,	1.5);
(579679.9,	4195027.0,	86.9,	1.5);	(579699.9,	4195027.0,	86.8,	1.5);
(579719.9,	4195027.0,	86.9,	1.5);	(579739.9,	4195027.0,	86.1,	1.5);
(579459.9,	4195047.0,	91.4,	1.5);	(579479.9,	4195047.0,	90.9,	1.5);
(579499.9,	4195047.0,	90.1,	1.5);	(579519.9,	4195047.0,	89.4,	1.5);
(579539.9,	4195047.0,	88.9,	1.5);	(579559.9,	4195047.0,	88.0,	1.5);
(579579.9,	4195047.0,	87.4,	1.5);	(579599.9,	4195047.0,	87.0,	1.5);
(579619.9,	4195047.0,	86.9,	1.5);	(579639.9,	4195047.0,	86.8,	1.5);
(579659.9,	4195047.0,	86.9,	1.5);	(579679.9,	4195047.0,	86.9,	1.5);
(579699.9,	4195047.0,	86.8,	1.5);	(579719.9,	4195047.0,	86.8,	1.5);
(579739.9,	4195047.0,	86.2,	1.5);	(579459.9,	4195067.0,	90.9,	1.5);
(579479.9,	4195067.0,	90.9,	1.5);	(579499.9,	4195067.0,	89.2,	1.5);
(579519.9,	4195067.0,	88.9,	1.5);	(579539.9,	4195067.0,	89.0,	1.5);
(579559.9,	4195067.0,	88.1,	1.5);	(579579.9,	4195067.0,	87.9,	1.5);
(579599.9,	4195067.0,	87.9,	1.5);	(579619.9,	4195067.0,	87.1,	1.5);
(579639.9,	4195067.0,	87.0,	1.5);	(579659.9,	4195067.0,	87.0,	1.5);
(579679.9,	4195067.0,	87.0,	1.5);	(579699.9,	4195067.0,	86.9,	1.5);
(579719.9,	4195067.0,	86.9,	1.5);	(579739.9,	4195067.0,	85.2,	1.5);

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( 579439.9, 4195087.0,      91.3,       1.5);         ( 579459.9, 4195087.0,      90.6,       1.5);
( 579479.9, 4195087.0,      90.1,       1.5);         ( 579499.9, 4195087.0,      89.8,       1.5);
( 579519.9, 4195087.0,      89.5,       1.5);         ( 579539.9, 4195087.0,      89.0,       1.5);
( 579559.9, 4195087.0,      88.9,       1.5);         ( 579579.9, 4195087.0,      88.8,       1.5);
( 579599.9, 4195087.0,      88.9,       1.5);         ( 579619.9, 4195087.0,      87.9,       1.5);
( 579639.9, 4195087.0,      87.5,       1.5);         ( 579659.9, 4195087.0,      87.0,       1.5);
( 579679.9, 4195087.0,      87.0,       1.5);         ( 579699.9, 4195087.0,      86.9,       1.5);
( 579719.9, 4195087.0,      86.9,       1.5);         ( 579739.9, 4195087.0,      86.0,       1.5);
( 579439.9, 4195107.0,      91.5,       1.5);         ( 579459.9, 4195107.0,      90.6,       1.5);
( 579479.9, 4195107.0,      90.2,       1.5);         ( 579499.9, 4195107.0,      89.8,       1.5);
( 579519.9, 4195107.0,      89.5,       1.5);         ( 579539.9, 4195107.0,      89.1,       1.5);
( 579559.9, 4195107.0,      88.9,       1.5);         ( 579579.9, 4195107.0,      88.8,       1.5);
( 579599.9, 4195107.0,      88.8,       1.5);         ( 579619.9, 4195107.0,      88.0,       1.5);
( 579639.9, 4195107.0,      87.5,       1.5);         ( 579659.9, 4195107.0,      87.1,       1.5);
( 579679.9, 4195107.0,      87.0,       1.5);         ( 579699.9, 4195107.0,      86.9,       1.5);
( 579719.9, 4195107.0,      86.8,       1.5);         ( 579739.9, 4195107.0,      86.1,       1.5);
( 579419.9, 4195127.0,      94.0,       1.5);         ( 579439.9, 4195127.0,      91.2,       1.5);
( 579459.9, 4195127.0,      90.5,       1.5);         ( 579479.9, 4195127.0,      90.0,       1.5);
( 579499.9, 4195127.0,      90.0,       1.5);         ( 579519.9, 4195127.0,      89.5,       1.5);
( 579539.9, 4195127.0,      89.0,       1.5);         ( 579559.9, 4195127.0,      89.0,       1.5);
( 579579.9, 4195127.0,      88.9,       1.5);         ( 579599.9, 4195127.0,      89.0,       1.5);
( 579619.9, 4195127.0,      88.1,       1.5);         ( 579639.9, 4195127.0,      87.9,       1.5);
( 579659.9, 4195127.0,      88.0,       1.5);         ( 579679.9, 4195127.0,      87.9,       1.5);
( 579699.9, 4195127.0,      87.6,       1.5);         ( 579719.9, 4195127.0,      87.1,       1.5);
( 579739.9, 4195127.0,      87.9,       1.5);         ( 579419.9, 4195147.0,      94.8,       1.5);
( 579439.9, 4195147.0,      91.4,       1.5);         ( 579459.9, 4195147.0,      90.8,       1.5);
( 579479.9, 4195147.0,      90.9,       1.5);         ( 579499.9, 4195147.0,      90.1,       1.5);
( 579519.9, 4195147.0,      89.8,       1.5);         ( 579539.9, 4195147.0,      89.9,       1.5);
( 579559.9, 4195147.0,      89.1,       1.5);         ( 579579.9, 4195147.0,      89.0,       1.5);
( 579599.9, 4195147.0,      89.0,       1.5);         ( 579619.9, 4195147.0,      88.8,       1.5);
( 579639.9, 4195147.0,      88.5,       1.5);         ( 579659.9, 4195147.0,      88.0,       1.5);
( 579679.9, 4195147.0,      88.1,       1.5);         ( 579699.9, 4195147.0,      88.3,       1.5);
( 579719.9, 4195147.0,      88.8,       1.5);         ( 579739.9, 4195147.0,      88.8,       1.5);
( 579419.9, 4195167.0,      94.7,       1.5);         ( 579439.9, 4195167.0,      91.8,       1.5);
( 579459.9, 4195167.0,      90.8,       1.5);         ( 579479.9, 4195167.0,      90.8,       1.5);
( 579499.9, 4195167.0,      90.2,       1.5);         ( 579519.9, 4195167.0,      89.8,       1.5);
( 579539.9, 4195167.0,      89.8,       1.5);         ( 579559.9, 4195167.0,      89.2,       1.5);
( 579579.9, 4195167.0,      89.0,       1.5);         ( 579599.9, 4195167.0,      89.0,       1.5);
( 579619.9, 4195167.0,      88.8,       1.5);         ( 579639.9, 4195167.0,      88.5,       1.5);
( 579659.9, 4195167.0,      88.1,       1.5);         ( 579679.9, 4195167.0,      88.1,       1.5);
( 579699.9, 4195167.0,      88.4,       1.5);         ( 579719.9, 4195167.0,      88.8,       1.5);
( 579739.9, 4195167.0,      88.7,       1.5);         ( 579459.9, 4195187.0,      91.5,       1.5);
( 579479.9, 4195187.0,      91.0,       1.5);         ( 579499.9, 4195187.0,      90.9,       1.5);
( 579519.9, 4195187.0,      90.5,       1.5);         ( 579539.9, 4195187.0,      90.0,       1.5);
( 579559.9, 4195187.0,      90.0,       1.5);         ( 579579.9, 4195187.0,      89.9,       1.5);
( 579599.9, 4195187.0,      89.9,       1.5);         ( 579619.9, 4195187.0,      89.1,       1.5);
( 579639.9, 4195187.0,      88.9,       1.5);         ( 579659.9, 4195187.0,      89.0,       1.5);
( 579679.9, 4195187.0,      89.0,       1.5);         ( 579699.9, 4195187.0,      89.4,       1.5);
( 579719.9, 4195187.0,      90.0,       1.5);         ( 579739.9, 4195187.0,      89.9,       1.5);
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CONC URBAN ELEV FLGPOL DFAULT

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

(579459.9,	4195207.0,	92.0,	1.5);	(579479.9,	4195207.0,	91.1,	1.5);
(579499.9,	4195207.0,	91.0,	1.5);	(579519.9,	4195207.0,	90.8,	1.5);
(579539.9,	4195207.0,	90.9,	1.5);	(579559.9,	4195207.0,	90.1,	1.5);
(579579.9,	4195207.0,	90.0,	1.5);	(579599.9,	4195207.0,	90.0,	1.5);
(579619.9,	4195207.0,	89.9,	1.5);	(579639.9,	4195207.0,	89.9,	1.5);
(579659.9,	4195207.0,	89.9,	1.5);	(579679.9,	4195207.0,	89.9,	1.5);
(579699.9,	4195207.0,	90.0,	1.5);	(579719.9,	4195207.0,	90.0,	1.5);
(579739.9,	4195207.0,	89.9,	1.5);	(579439.9,	4195227.0,	93.1,	1.5);
(579459.9,	4195227.0,	91.9,	1.5);	(579479.9,	4195227.0,	91.2,	1.5);
(579499.9,	4195227.0,	91.0,	1.5);	(579519.9,	4195227.0,	90.8,	1.5);
(579539.9,	4195227.0,	90.8,	1.5);	(579559.9,	4195227.0,	90.2,	1.5);
(579579.9,	4195227.0,	90.0,	1.5);	(579599.9,	4195227.0,	90.0,	1.5);
(579619.9,	4195227.0,	89.9,	1.5);	(579639.9,	4195227.0,	89.9,	1.5);
(579659.9,	4195227.0,	89.9,	1.5);	(579679.9,	4195227.0,	89.9,	1.5);
(579699.9,	4195227.0,	90.0,	1.5);	(579719.9,	4195227.0,	90.0,	1.5);
(579739.9,	4195227.0,	89.9,	1.5);	(579379.9,	4195247.0,	96.2,	1.5);
(579399.9,	4195247.0,	95.4,	1.5);	(579419.9,	4195247.0,	95.0,	1.5);
(579439.9,	4195247.0,	93.1,	1.5);	(579459.9,	4195247.0,	92.1,	1.5);
(579479.9,	4195247.0,	91.0,	1.5);	(579499.9,	4195247.0,	91.0,	1.5);
(579519.9,	4195247.0,	91.0,	1.5);	(579539.9,	4195247.0,	91.0,	1.5);
(579559.9,	4195247.0,	90.9,	1.5);	(579579.9,	4195247.0,	90.5,	1.5);
(579599.9,	4195247.0,	90.0,	1.5);	(579619.9,	4195247.0,	90.0,	1.5);
(579639.9,	4195247.0,	90.1,	1.5);	(579659.9,	4195247.0,	90.0,	1.5);
(579679.9,	4195247.0,	90.9,	1.5);	(579699.9,	4195247.0,	90.9,	1.5);
(579719.9,	4195247.0,	91.0,	1.5);	(579739.9,	4195247.0,	90.9,	1.5);
(579359.9,	4195267.0,	98.0,	1.5);	(579379.9,	4195267.0,	96.2,	1.5);
(579399.9,	4195267.0,	95.4,	1.5);	(579419.9,	4195267.0,	95.0,	1.5);
(579439.9,	4195267.0,	93.9,	1.5);	(579459.9,	4195267.0,	93.2,	1.5);
(579479.9,	4195267.0,	92.8,	1.5);	(579499.9,	4195267.0,	92.0,	1.5);
(579519.9,	4195267.0,	91.8,	1.5);	(579539.9,	4195267.0,	91.9,	1.5);
(579559.9,	4195267.0,	91.1,	1.5);	(579579.9,	4195267.0,	90.5,	1.5);
(579599.9,	4195267.0,	90.1,	1.5);	(579619.9,	4195267.0,	90.8,	1.5);
(579639.9,	4195267.0,	90.9,	1.5);	(579659.9,	4195267.0,	90.9,	1.5);
(579679.9,	4195267.0,	91.0,	1.5);	(579699.9,	4195267.0,	91.0,	1.5);
(579719.9,	4195267.0,	91.0,	1.5);	(579739.9,	4195267.0,	90.9,	1.5);
(579359.9,	4195287.0,	98.0,	1.5);	(579379.9,	4195287.0,	96.3,	1.5);
(579399.9,	4195287.0,	95.4,	1.5);	(579419.9,	4195287.0,	94.9,	1.5);
(579439.9,	4195287.0,	94.0,	1.5);	(579459.9,	4195287.0,	93.2,	1.5);
(579479.9,	4195287.0,	92.8,	1.5);	(579499.9,	4195287.0,	92.1,	1.5);
(579519.9,	4195287.0,	91.8,	1.5);	(579539.9,	4195287.0,	91.8,	1.5);
(579559.9,	4195287.0,	91.1,	1.5);	(579579.9,	4195287.0,	90.5,	1.5);

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( 579599.9, 4195287.0,      90.2,       1.5);         ( 579619.9, 4195287.0,      90.7,       1.5);
( 579639.9, 4195287.0,      90.9,       1.5);         ( 579659.9, 4195287.0,      90.9,       1.5);
( 579679.9, 4195287.0,      91.0,       1.5);         ( 579699.9, 4195287.0,      91.0,       1.5);
( 579719.9, 4195287.0,      91.0,       1.5);         ( 579739.9, 4195287.0,      90.9,       1.5);
( 579339.9, 4195307.0,      98.1,       1.5);         ( 579359.9, 4195307.0,      97.0,       1.5);
( 579379.9, 4195307.0,      96.1,       1.5);         ( 579399.9, 4195307.0,      95.9,       1.5);
( 579419.9, 4195307.0,      95.9,       1.5);         ( 579439.9, 4195307.0,      95.0,       1.5);
( 579459.9, 4195307.0,      94.4,       1.5);         ( 579479.9, 4195307.0,      94.0,       1.5);
( 579499.9, 4195307.0,      93.0,       1.5);         ( 579519.9, 4195307.0,      92.9,       1.5);
( 579539.9, 4195307.0,      92.9,       1.5);         ( 579559.9, 4195307.0,      92.0,       1.5);
( 579579.9, 4195307.0,      91.8,       1.5);         ( 579599.9, 4195307.0,      92.0,       1.5);
( 579619.9, 4195307.0,      92.0,       1.5);         ( 579639.9, 4195307.0,      92.4,       1.5);
( 579659.9, 4195307.0,      93.0,       1.5);         ( 579679.9, 4195307.0,      94.7,       1.5);
( 579699.9, 4195307.0,      95.0,       1.5);         ( 579719.9, 4195307.0,      95.8,       1.5);
( 579739.9, 4195307.0,      93.1,       1.5);         ( 579359.9, 4195327.0,      97.9,       1.5);
( 579379.9, 4195327.0,      96.9,       1.5);         ( 579399.9, 4195327.0,      96.4,       1.5);
( 579419.9, 4195327.0,      96.0,       1.5);         ( 579439.9, 4195327.0,      95.1,       1.5);
( 579459.9, 4195327.0,      94.4,       1.5);         ( 579479.9, 4195327.0,      94.0,       1.5);
( 579499.9, 4195327.0,      93.1,       1.5);         ( 579519.9, 4195327.0,      93.0,       1.5);
( 579539.9, 4195327.0,      93.0,       1.5);         ( 579559.9, 4195327.0,      92.9,       1.5);
( 579579.9, 4195327.0,      92.9,       1.5);         ( 579599.9, 4195327.0,      92.9,       1.5);
( 579619.9, 4195327.0,      93.0,       1.5);         ( 579639.9, 4195327.0,      94.1,       1.5);
( 579659.9, 4195327.0,      95.1,       1.5);         ( 579679.9, 4195327.0,     100.0,       1.5);
( 579699.9, 4195327.0,     102.0,       1.5);         ( 579719.9, 4195327.0,     104.6,       1.5);
( 579739.9, 4195327.0,      98.7,       1.5);         ( 579399.9, 4195347.0,      96.4,       1.5);
( 579419.9, 4195347.0,      95.9,       1.5);         ( 579439.9, 4195347.0,      95.1,       1.5);
( 579459.9, 4195347.0,      94.4,       1.5);         ( 579479.9, 4195347.0,      93.9,       1.5);
( 579499.9, 4195347.0,      93.2,       1.5);         ( 579519.9, 4195347.0,      93.0,       1.5);
( 579539.9, 4195347.0,      93.0,       1.5);         ( 579559.9, 4195347.0,      92.9,       1.5);
( 579579.9, 4195347.0,      92.9,       1.5);         ( 579599.9, 4195347.0,      92.9,       1.5);
( 579619.9, 4195347.0,      93.1,       1.5);         ( 579639.9, 4195347.0,      94.3,       1.5);
( 579659.9, 4195347.0,      95.6,       1.5);         ( 579679.9, 4195347.0,      99.9,       1.5);
( 579699.9, 4195347.0,     102.3,       1.5);         ( 579719.9, 4195347.0,     103.8,       1.5);
( 579739.9, 4195347.0,      99.2,       1.5);         ( 579379.9, 4195367.0,      97.1,       1.5);
( 579399.9, 4195367.0,      96.5,       1.5);         ( 579419.9, 4195367.0,      96.0,       1.5);
( 579439.9, 4195367.0,      95.1,       1.5);         ( 579459.9, 4195367.0,      94.9,       1.5);
( 579479.9, 4195367.0,      94.9,       1.5);         ( 579499.9, 4195367.0,      94.0,       1.5);
( 579519.9, 4195367.0,      93.9,       1.5);         ( 579539.9, 4195367.0,      94.0,       1.5);
( 579559.9, 4195367.0,      94.0,       1.5);         ( 579579.9, 4195367.0,      93.9,       1.5);
( 579599.9, 4195367.0,      94.0,       1.5);         ( 579619.9, 4195367.0,      93.9,       1.5);
( 579639.9, 4195367.0,      94.0,       1.5);         ( 579659.9, 4195367.0,      93.3,       1.5);
( 579679.9, 4195367.0,      99.6,       1.5);         ( 579699.9, 4195367.0,     101.4,       1.5);
( 579719.9, 4195367.0,     102.8,       1.5);         ( 579739.9, 4195367.0,      98.2,       1.5);
( 579419.9, 4195387.0,      96.0,       1.5);         ( 579439.9, 4195387.0,      95.9,       1.5);
( 579459.9, 4195387.0,      95.8,       1.5);         ( 579479.9, 4195387.0,      95.9,       1.5);
( 579499.9, 4195387.0,      95.0,       1.5);         ( 579519.9, 4195387.0,      94.9,       1.5);
( 579539.9, 4195387.0,      94.9,       1.5);         ( 579559.9, 4195387.0,      94.8,       1.5);
( 579579.9, 4195387.0,      94.5,       1.5);         ( 579599.9, 4195387.0,      94.0,       1.5);
( 579619.9, 4195387.0,      93.9,       1.5);         ( 579639.9, 4195387.0,      93.5,       1.5);
```

CONC URBAN ELEV FLGPOL DFAULT

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

(	579659.9,	4195387.0,	93.0,	1.5);	(579679.9,	4195387.0,	93.8,	1.5);
(	579699.9,	4195387.0,	95.0,	1.5);	(579719.9,	4195387.0,	95.5,	1.5);
(	579739.9,	4195387.0,	94.4,	1.5);	(579459.9,	4195407.0,	95.8,	1.5);
(	579479.9,	4195407.0,	95.8,	1.5);	(579499.9,	4195407.0,	95.1,	1.5);
(	579519.9,	4195407.0,	94.9,	1.5);	(579539.9,	4195407.0,	94.9,	1.5);
(	579559.9,	4195407.0,	94.8,	1.5);	(579579.9,	4195407.0,	94.5,	1.5);
(	579599.9,	4195407.0,	94.1,	1.5);	(579619.9,	4195407.0,	93.9,	1.5);
(	579639.9,	4195407.0,	93.5,	1.5);	(579659.9,	4195407.0,	93.1,	1.5);
(	579679.9,	4195407.0,	93.7,	1.5);	(579699.9,	4195407.0,	94.6,	1.5);
(	579719.9,	4195407.0,	95.2,	1.5);	(579739.9,	4195407.0,	94.3,	1.5);
(	579479.9,	4195427.0,	96.9,	1.5);	(579499.9,	4195427.0,	96.0,	1.5);
(	579519.9,	4195427.0,	95.9,	1.5);	(579539.9,	4195427.0,	95.9,	1.5);
(	579559.9,	4195427.0,	95.1,	1.5);	(579579.9,	4195427.0,	94.5,	1.5);
(	579599.9,	4195427.0,	94.0,	1.5);	(579619.9,	4195427.0,	94.0,	1.5);
(	579639.9,	4195427.0,	94.2,	1.5);	(579659.9,	4195427.0,	94.8,	1.5);
(	579679.9,	4195427.0,	92.3,	1.5);	(579699.9,	4195427.0,	92.2,	1.5);
(	579719.9,	4195427.0,	92.0,	1.5);	(579739.9,	4195427.0,	91.2,	1.5);
(	579147.1,	4195300.5,	114.0,	1.5);	(579120.8,	4195284.0,	115.2,	1.5);
(	579110.7,	4195327.5,	117.9,	1.5);	(579110.7,	4195356.0,	120.3,	1.5);
(	579425.1,	4195468.0,	97.3,	1.5);	(579282.6,	4195481.5,	101.3,	1.5);
(	579305.8,	4195479.5,	100.7,	1.5);	(579357.4,	4195501.5,	100.0,	1.5);
(	579395.8,	4195508.5,	98.9,	1.5);	(579311.9,	4195526.0,	100.8,	1.5);
(	579394.8,	4195530.0,	99.6,	1.5);	(579269.4,	4195511.5,	102.0,	1.5);
(	579263.3,	4195537.0,	102.0,	1.5);	(579336.1,	4195555.0,	100.6,	1.5);
(	579303.8,	4195549.0,	101.0,	1.5);	(579586.1,	4195471.0,	95.9,	1.5);
(	579605.4,	4195495.5,	95.9,	1.5);	(578868.5,	4194908.0,	135.2,	1.5);

*** 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
```

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,

*** WIND PROFILE EXPONENTS ***

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
B	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
C	.20000E+00	.20000E+00	.20000E+00	.20000E+00	.20000E+00	.20000E+00
D	.25000E+00	.25000E+00	.25000E+00	.25000E+00	.25000E+00	.25000E+00
E	.30000E+00	.30000E+00	.30000E+00	.30000E+00	.30000E+00	.30000E+00
F	.30000E+00	.30000E+00	.30000E+00	.30000E+00	.30000E+00	.30000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
B	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
C	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01

CONC URBAN ELEV FLGPOL DFAULT

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

FILE: C:\!METFI~1\BAAQMD~1\CND033~1.ASC
FORMAT: (4I2,2F9.4,F6.1,I2,2F7.1,f9.4,f10.1,f8.4,i4,f7.2)
SURFACE STATION NO.: 2903 UPPER AIR STATION NO.: 2903
NAME: UNKNOWN NAME: UNKNOWN
YEAR: 2003 YEAR: 2003

YR	MN	DY	HR	FLOW VECTOR	SPEED (M/S)	TEMP (K)	STAB CLASS	MIXING HEIGHT (M) RURAL	MIXING HEIGHT (M) URBAN	USTAR (M/S)	M-O LENGTH (M)	Z-0 (M)	IPCODE	PRATE (mm/HR)
03	01	01	01	23.8	1.00	278.5	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	02	11.2	1.00	278.0	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	03	203.2	1.00	277.0	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	04	63.5	1.00	276.8	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	05	273.5	1.00	276.3	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	06	315.6	1.00	275.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	07	10.8	1.00	276.2	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	08	4.9	1.00	276.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	09	20.0	1.00	277.5	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	10	328.1	1.00	279.0	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	11	174.8	1.03	280.9	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	12	167.4	2.32	283.6	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	13	217.3	2.50	284.9	1	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	14	205.0	2.50	285.8	1	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	15	199.3	2.41	285.4	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	16	222.7	2.55	285.6	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	17	213.3	2.24	284.6	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	18	210.9	2.10	284.0	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	19	208.8	1.12	283.2	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	20	191.7	1.12	282.5	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	21	194.1	1.07	281.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	22	183.4	1.48	282.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	23	328.2	1.61	281.4	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	24	139.3	1.03	280.7	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00

*** NOTES: STABILITY CLASS 1=A, 2=B, 3=C, 4=D, 5=E AND 6=F.
FLOW VECTOR IS DIRECTION TOWARD WHICH WIND IS BLOWING.

CONC URBAN ELEV FLGPOL DFAULT

*** THE SUMMARY OF MAXIMUM ANNUAL (3 YRS) RESULTS ***

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

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)			OF TYPE	NETWORK GRID-ID
ONSITE	1ST HIGHEST VALUE IS	6.10759 AT	(578868.50,	4194908.00,	135.17, 1.50)	DC	NA
	2ND HIGHEST VALUE IS	4.64442 AT	(579339.88,	4195307.00,	98.07, 1.50)	DC	NA
	3RD HIGHEST VALUE IS	4.44001 AT	(579359.88,	4195267.00,	98.04, 1.50)	DC	NA
	4TH HIGHEST VALUE IS	4.04414 AT	(579359.88,	4195287.00,	97.97, 1.50)	DC	NA
	5TH HIGHEST VALUE IS	3.69987 AT	(579379.88,	4195247.00,	96.25, 1.50)	DC	NA
	6TH HIGHEST VALUE IS	3.66124 AT	(579359.88,	4195307.00,	97.03, 1.50)	DC	NA
	7TH HIGHEST VALUE IS	3.45684 AT	(579379.88,	4195267.00,	96.17, 1.50)	DC	NA
	8TH HIGHEST VALUE IS	3.30711 AT	(579359.88,	4195327.00,	97.90, 1.50)	DC	NA
	9TH HIGHEST VALUE IS	3.21592 AT	(579379.88,	4195287.00,	96.29, 1.50)	DC	NA
	10TH HIGHEST VALUE IS	2.98260 AT	(579379.88,	4195307.00,	96.08, 1.50)	DC	NA
HAULING	1ST HIGHEST VALUE IS	9.84497 AT	(579339.88,	4195307.00,	98.07, 1.50)	DC	NA
	2ND HIGHEST VALUE IS	9.79875 AT	(579359.88,	4195267.00,	98.04, 1.50)	DC	NA
	3RD HIGHEST VALUE IS	9.20880 AT	(579419.88,	4195127.00,	93.96, 1.50)	DC	NA
	4TH HIGHEST VALUE IS	8.03335 AT	(579359.88,	4195287.00,	97.97, 1.50)	DC	NA
	5TH HIGHEST VALUE IS	7.93893 AT	(579419.88,	4195147.00,	94.83, 1.50)	DC	NA
	6TH HIGHEST VALUE IS	7.55873 AT	(579459.88,	4195047.00,	91.40, 1.50)	DC	NA
	7TH HIGHEST VALUE IS	7.46445 AT	(579439.88,	4195087.00,	91.27, 1.50)	DC	NA
	8TH HIGHEST VALUE IS	6.85648 AT	(579379.88,	4195247.00,	96.25, 1.50)	DC	NA
	9TH HIGHEST VALUE IS	6.58079 AT	(579419.88,	4195167.00,	94.74, 1.50)	DC	NA
	10TH HIGHEST VALUE IS	6.57115 AT	(579439.88,	4195107.00,	91.49, 1.50)	DC	NA
ALL	1ST HIGHEST VALUE IS	14.48923 AT	(579339.88,	4195307.00,	98.07, 1.50)	DC	NA
	2ND HIGHEST VALUE IS	14.23860 AT	(579359.88,	4195267.00,	98.04, 1.50)	DC	NA
	3RD HIGHEST VALUE IS	12.13803 AT	(579419.88,	4195127.00,	93.96, 1.50)	DC	NA
	4TH HIGHEST VALUE IS	12.07732 AT	(579359.88,	4195287.00,	97.97, 1.50)	DC	NA
	5TH HIGHEST VALUE IS	10.83255 AT	(579419.88,	4195147.00,	94.83, 1.50)	DC	NA
	6TH HIGHEST VALUE IS	10.55618 AT	(579379.88,	4195247.00,	96.25, 1.50)	DC	NA
	7TH HIGHEST VALUE IS	9.94475 AT	(579359.88,	4195307.00,	97.03, 1.50)	DC	NA
	8TH HIGHEST VALUE IS	9.78522 AT	(579439.88,	4195087.00,	91.27, 1.50)	DC	NA
	9TH HIGHEST VALUE IS	9.45921 AT	(579379.88,	4195267.00,	96.17, 1.50)	DC	NA
	10TH HIGHEST VALUE IS	9.42148 AT	(579459.88,	4195047.00,	91.40, 1.50)	DC	NA

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

CONC   URBAN ELEV FLGPOL DFAULT

*** Message Summary : ISCST3 Model Execution ***

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

A Total of   0 Fatal Error Message(s)
A Total of   1 Warning Message(s)
A Total of   80 Informational Message(s)

A Total of   80 Calm Hours Identified

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

   ********   WARNING MESSAGES   ********
RE W282 5416 CHK_EL:RecElev < SrcBase; See non-DFAULT HE>ZI option in MCB#9

   ****
   *** ISCST3 Finishes Successfully ***
   ****

Appendix

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Appendix C. Risk Calculation Worksheets

Appendix

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Table C1
Model Output Calculations

Model Output Calculations - Unmitigated Scenario - Offsite Residents					
Source	ISCST3 Output [1] ($\mu g/m^3$)	Pollutant	Emission Rates [2] (g/s)	Scalar [3]	Mass GLC ($\mu g/m^3$)
(a)	(c)	(b)	(d)	(e)	(f)
	Annual Average		Average Daily		Annual Average
2015 Onsite	6.11	DPM	7.83E-02	0.668	**3.20E-01**
		$PM_{2.5}$	1.36E-01	0.668	**5.57E-01**
2015 Offsite	9.84	DPM	1.14E-05	0.668	**7.51E-05**
		$PM_{2.5}$	5.48E-05	0.668	**3.61E-04**
2016 Onsite	6.11	DPM	1.01E-02	1.000	**6.19E-02**
		$PM_{2.5}$	9.94E-03	1.000	**6.07E-02**
2016 Offsite	9.84	DPM	1.03E-05	1.000	**1.01E-04**
		$PM_{2.5}$	8.90E-05	1.000	**8.76E-04**
2017 Onsite	6.11	DPM	1.07E-02	0.827	**5.39E-02**
		$PM_{2.5}$	1.04E-02	0.827	**5.24E-02**
2017 Offsite	9.84	DPM	9.70E-06	0.827	**7.90E-05**
		$PM_{2.5}$	9.13E-05	0.827	**7.44E-04**
Model Output Calculations - with Mitigation (Tier 3 Engines) - Offsite Residents					
Source	ISCST3 Output [1] ($\mu g/m^3$)	Pollutant	Emission Rates [2] (g/s)	Scalar [3]	Mass GLC ($\mu g/m^3$)
(a)	(c)	(b)	(d)	(e)	(f)
	Annual Average		Average Daily		Annual Average
2015 Onsite	6.11	DPM	2.75E-02	0.668	**1.12E-01**
		$PM_{2.5}$	5.49E-02	0.668	**2.24E-01**
2015 Offsite	9.84	DPM	1.14E-05	0.668	**7.51E-05**
		$PM_{2.5}$	5.48E-05	0.668	**3.61E-04**
2016 Onsite	6.11	DPM	6.50E-03	1.000	**3.97E-02**
		$PM_{2.5}$	6.50E-03	1.000	**3.97E-02**
2016 Offsite	9.84	DPM	1.03E-05	1.000	**1.01E-04**
		$PM_{2.5}$	8.90E-05	1.000	**8.76E-04**
2017 Onsite	6.11	DPM	7.04E-03	0.827	**3.56E-02**
		$PM_{2.5}$	7.04E-03	0.827	**3.56E-02**
2017 Offsite	9.84	DPM	9.70E-06	0.827	**7.90E-05**
		$PM_{2.5}$	9.13E-05	0.827	**7.44E-04**

[1] ISCST3 Output based on unit emission rates for sources (1 g/s).

[2] Emission Rates from Emission Rate Calculations (Appendix A - Input to ISCST3 Model).

[3] Scalar applied to adjust yearly ISCST3 emissions to actual number of days construction emissions occur.

Construction Risk Assessment - Table C2
Adult Exposure Scenario - 70 Years
Offsite Resident - Unmitigated Scenario

Source	Mass GLC	Weight Fraction	Contaminant	Carcinogenic Risk			Noncarcinogenic Hazards/ Toxicological Endpoints*												
				CPF	DOSE **	RISK	REL	ALI	BONE	CARDIO	DEV	ENDO	EYE	HEME	IMM	KID	NERV	REPRO	RESP	SKIN
	($\mu g/m^3$)			$(mg/kg/day)^{-1}$	(mg/kg/day)		($\mu g/m^3$)													
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)
Construction Period																				
2015 On-Site Emissions	3.20E-01	1.00E+00	Diesel Particulate	1.1E+00	1.3E-06	1.5E-06	5.0E+00												6.4E-02	
2015 Truck Route	7.51E-05	1.00E+00	Diesel Particulate	1.1E+00	3.1E-10	3.4E-10	5.0E+00												1.5E-05	
2016 On-Site Emissions	6.19E-02	1.00E+00	Diesel Particulate	1.1E+00	2.6E-07	2.8E-07	5.0E+00												1.2E-02	
2016 Truck Route	1.01E-04	1.00E+00	Diesel Particulate	1.1E+00	4.2E-10	4.6E-10	5.0E+00												2.0E-05	
2017 On-Site Emissions	5.39E-02	1.00E+00	Diesel Particulate	1.1E+00	2.2E-07	2.5E-07	5.0E+00												1.1E-02	
2017 Truck Route	7.90E-05	1.00E+00	Diesel Particulate	1.1E+00	3.3E-10	3.6E-10	5.0E+00												1.6E-05	
			TOTAL			2.0E-06		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.7E-02	0.0E+00
			BAAQMD Cancer Risk Adjustment Factor - 70-year Adult Scenario			1.7														
			Adjusted Cancer Risk			3.3E-06														

* Key to Toxicological Endpoints

ALI	Alimentary
BONE	Bone
CARDIO	Cardiovascular
DEV	Developmental
ENDO	Endocrine
EYE	Eye
HEME	Hematologic
IMM	Immune
KID	Kidney
NERV	Nervous
REPRO	Reproductive
RESP	Respiratory
SKIN	Skin

** Exposure factors used to calculate dose

daily breathing rate (L/kg-day) - adult residen	302
inhalation absorption factor	1.0
exposure frequency (days/year) - residents	350
exposure duration (years)	1.0
averaging time (days) - 70 year duration	25550
fraction of time at home	1.0
2015 maximum annual PM2.5 concentration ($\mu g/m^3$)	0.56
2016 maximum annual PM2.5 concentration ($\mu g/m^3$)	0.06
2017 maximum annual PM2.5 concentration ($\mu g/m^3$)	0.05

Construction Risk Assessment - Table C3
Adult Exposure Scenario - 70 Years
Offsite Resident - Mitigated Scenario
Tier 3 Engines/Level 3 Diesel Particulate Filters

Source	Mass GLC	Weight Fraction	Contaminant	Carcinogenic Risk			Noncarcinogenic Hazards/ Toxicological Endpoints*												
				CPF	DOSE **	RISK	REL	ALI	BONE	CARDIO	DEV	ENDO	EYE	HEME	IMM	KID	NERV	REPRO	RESP	SKIN
	($\mu g/m^3$)			$(mg/kg/day)^{-1}$	(mg/kg/day)		($\mu g/m^3$)													
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)
Construction Period																				
2015 On-Site Emissions	1.12E-01	1.00E+00	Diesel Particulate	1.1E+00	4.6E-07	3.7E-07	5.0E+00												2.2E-02	
2015 Truck Route	7.51E-05	1.00E+00	Diesel Particulate	1.1E+00	3.1E-10	2.5E-10	5.0E+00												1.5E-05	
2016 On-Site Emissions	3.97E-02	1.00E+00	Diesel Particulate	1.1E+00	1.6E-07	1.3E-07	5.0E+00												7.9E-03	
2016 Truck Route	1.01E-04	1.00E+00	Diesel Particulate	1.1E+00	4.2E-10	3.4E-10	5.0E+00												2.0E-05	
2017 On-Site Emissions	3.56E-02	1.00E+00	Diesel Particulate	1.1E+00	1.5E-07	1.2E-07	5.0E+00												7.1E-03	
2017 Truck Route	7.90E-05	1.00E+00	Diesel Particulate	1.1E+00	3.3E-10	2.6E-10	5.0E+00												1.6E-05	
			TOTAL			6.3E-07		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-02	0.0E+00
			BAAQMD Cancer Risk Adjustment Factor - 70-year Adult Scenario			1.7														
			Adjusted Cancer Risk			1.1E-06														

* Key to Toxicological Endpoints

ALI	Alimentary
BONE	Bone
CARDIO	Cardiovascular
DEV	Developmental
ENDO	Endocrine
EYE	Eye
HEME	Hematologic
IMM	Immune
KID	Kidney
NERV	Nervous
REPRO	Reproductive
RESP	Respiratory
SKIN	Skin

** Exposure factors used to calculate dose

daily breathing rate (L/kg-day) - adult residen	302
inhalation absorption factor	1.0
exposure frequency (days/year) - residents	350
exposure duration (years)	1.0
averaging time (days) - 70 year duration	25550
fraction of time at home	0.73
2015 maximum annual PM2.5 concentration ($\mu g/m^3$)	0.22
2016 maximum annual PM2.5 concentration ($\mu g/m^3$)	0.04
2017 maximum annual PM2.5 concentration ($\mu g/m^3$)	0.04

Construction Risk Assessment - Table C4
Child Exposure Scenario - 9 Years
Offsite Resident - Unmitigated Scenario

Source	Mass GLC	Weight Fraction	Contaminant	Carcinogenic Risk			Noncarcinogenic Hazards/ Toxicological Endpoints*												
				CPF	DOSE **	RISK	REL	ALI	BONE	CARDIO	DEV	ENDO	EYE	HEME	IMM	KID	NERV	REPRO	RESP	SKIN
	($\mu g/m^3$)			$(mg/kg/day)^{-1}$	(mg/kg/day)		($\mu g/m^3$)													
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)
Construction Period																				
2015 On-Site Emissions	3.20E-01	1.00E+00	Diesel Particulate	1.1E+00	2.5E-06	2.8E-06	5.0E+00												6.4E-02	
2015 Truck Route	7.51E-05	1.00E+00	Diesel Particulate	1.1E+00	6.0E-10	6.6E-10	5.0E+00												1.5E-05	
2016 On-Site Emissions	6.19E-02	1.00E+00	Diesel Particulate	1.1E+00	4.9E-07	5.4E-07	5.0E+00												1.2E-02	
2016 Truck Route	1.01E-04	1.00E+00	Diesel Particulate	1.1E+00	8.0E-10	8.9E-10	5.0E+00												2.0E-05	
2017 On-Site Emissions	5.39E-02	1.00E+00	Diesel Particulate	1.1E+00	4.3E-07	4.7E-07	5.0E+00												1.1E-02	
2017 Truck Route	7.90E-05	1.00E+00	Diesel Particulate	1.1E+00	6.3E-10	6.9E-10	5.0E+00												1.6E-05	
			TOTAL			3.8E-06		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	8.7E-02	0.0E+00
			BAAQMD Cancer Risk Adjustment Factor - 9-year Child Scenario			4.7														
			Adjusted Cancer Risk			1.8E-05														

* Key to Toxicological Endpoints

ALI	Alimentary
BONE	Bone
CARDIO	Cardiovascular
DEV	Developmental
ENDO	Endocrine
EYE	Eye
HEME	Hematologic
IMM	Immune
KID	Kidney
NERV	Nervous
REPRO	Reproductive
RESP	Respiratory
SKIN	Skin

** Exposure factors used to calculate dose

daily breathing rate (L/kg-day) - child residen	581
inhalation absorption factor	1.0
exposure frequency (days/year) - residents	350
exposure duration (years)	1.0
averaging time (days) - 70 year duration	25550
fraction of time at home	1.0
2015 maximum annual PM2.5 concentration ($\mu g/m^3$)	0.56
2016 maximum annual PM2.5 concentration ($\mu g/m^3$)	0.06
2017 maximum annual PM2.5 concentration ($\mu g/m^3$)	0.05

Construction Risk Assessment - Table C5
Child Exposure Scenario - 9 Years
Offsite Resident - Mitigated Scenario
Tier 3 Engines/Level 3 Diesel Particulate Filters

Source	Mass GLC	Weight Fraction	Contaminant	Carcinogenic Risk			Noncarcinogenic Hazards/ Toxicological Endpoints*												
				CPF	DOSE **	RISK	REL	ALI	BONE	CARDIO	DEV	ENDO	EYE	HEME	IMM	KID	NERV	REPRO	RESP	SKIN
	($\mu g/m^3$)			$(mg/kg/day)^{-1}$	(mg/kg/day)		($\mu g/m^3$)													
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)
Construction Period																				
2015 On-Site Emissions	1.12E-01	1.00E+00	Diesel Particulate	1.1E+00	8.9E-07	7.4E-07	5.0E+00												2.2E-02	
2015 Truck Route	7.51E-05	1.00E+00	Diesel Particulate	1.1E+00	6.0E-10	4.9E-10	5.0E+00												1.5E-05	
2016 On-Site Emissions	3.97E-02	1.00E+00	Diesel Particulate	1.1E+00	3.2E-07	2.6E-07	5.0E+00												7.9E-03	
2016 Truck Route	1.01E-04	1.00E+00	Diesel Particulate	1.1E+00	8.0E-10	6.6E-10	5.0E+00												2.0E-05	
2017 On-Site Emissions	3.56E-02	1.00E+00	Diesel Particulate	1.1E+00	2.8E-07	2.3E-07	5.0E+00												7.1E-03	
2017 Truck Route	7.90E-05	1.00E+00	Diesel Particulate	1.1E+00	6.3E-10	5.2E-10	5.0E+00												1.6E-05	
			TOTAL			1.2E-06		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	3.8E-02	0.0E+00
			BAAQMD Cancer Risk Adjustment Factor - 9-year Child Scenario			4.7														
			Adjusted Cancer Risk			5.8E-06														

* Key to Toxicological Endpoints

ALI	Alimentary
BONE	Bone
CARDIO	Cardiovascular
DEV	Developmental
ENDO	Endocrine
EYE	Eye
HEME	Hematologic
IMM	Immune
KID	Kidney
NERV	Nervous
REPRO	Reproductive
RESP	Respiratory
SKIN	Skin

** Exposure factors used to calculate dose

daily breathing rate (L/kg-day) - child residen	581
inhalation absorption factor	1.0
exposure frequency (days/year) - residents	350
exposure duration (years)	1.0
averaging time (days) - 70 year duration	25550
fraction of time at home	0.75
2015 maximum annual PM2.5 concentration ($\mu g/m^3$)	0.22
2016 maximum annual PM2.5 concentration ($\mu g/m^3$)	0.04
2017 maximum annual PM2.5 concentration ($\mu g/m^3$)	0.04

Appendix G2:
Operational HRA

PLACEWORKS

MEMORANDUM

DATE September 5, 2014

TO Greg Wolff, Senior Planner
City of Lafayette

FROM Dr. Cathleen Fitzgerald, P.E. and Steven Bush, E.I.T.

SUBJECT Technical Memorandum, Operational Health Risk Assessment for The Homes at Deer Hill (Terraces of Lafayette Project Alternative)

Dear Mr. Wolff:

PlaceWorks was retained by the City of Lafayette to conduct an Air Quality Analysis and evaluate health risk issues related to the Homes at Deer Hill Project (Terraces of Lafayette Project Alternative), referred to in this Operational Health Risk Assessment (HRA) Technical Memorandum as the "Revised Project." The Terraces of Lafayette Project was certified on August 12, 2013. The Terraces of Lafayette Project is referenced throughout this Technical Memorandum is referred to as the "Certified Project."

The Project Site is located on an approximately 22.27-acre parcel at 3233 Deer Hill Road in east central Lafayette. As part of the Revised Project, a dog park would be created on an approximately 3-acre parcel on the north side of Deer Hill Road across from the Project site. The Project site and dog park site are together referred to as the Revised Project Site in this Technical Memorandum.

Guidance from the California Environmental Protection Agency (Cal/EPA), Office of Environmental Health Hazard Assessment (OEHHA), California Air Pollution Control Officers Association (CAPCOA), and the Bay Area Air Quality Management District (BAAQMD) recommend the completion of health risk assessments to determine the impacts of hazardous air emissions upon land use projects that place receptors in the vicinity of existing sources. The procedures described in BAAQMD's *Recommended Methods for Screening and Modeling Local Risks and Hazards* (2012), the CAPCOA guidance document *Health Risk Assessments for Proposed Land Use Projects* (2009), and exposure parameters specified in the OEHHA guidance document, *Air Toxics Hot Spots Program Risk Assessment Guidelines* (2012), were used for this evaluation.

The Project Site is located at the southwest corner of the Deer Hill Road/Pleasant Hill Road intersection and is bounded by Pleasant Hill Road to the east, Highway 24 to the south and Deer Hill Road to the west and north. The Project Site is within the City of Lafayette, Contra Costa County, California. The Project Site and surrounding land use are shown in Figure 1.

TERRACES OF LAFAYETTE OPERATIONAL HRA (2012)

An Operational HRA was prepared for the Certified Project that evaluated potential health risks from off-site emission sources within 1,000 feet of the Project Site along the site boundary and at the locations of the proposed residential apartment buildings. Based upon a review of the 2012 Operational HRA, the lifetime cancer risk (70-year, 24-hour outdoor exposure) and non-carcinogenic chronic hazard index were below BAAQMD's significance thresholds and would not significantly impact the health of Project residents. However, the annual average $PM_{2.5}$ concentration for on-site residents was determined to exceed BAAQMD's significance threshold for the southern 300 feet of the Project Site, closest to Highway 24. To mitigate exposure to $PM_{2.5}$, HVAC system filters with a minimum efficiency rate value (MERV) of 9 to 12 were recommended (Mitigation Measure AQ-3), which are capable of reducing $PM_{2.5}$ concentrations by at least 40 percent. With installation of MERV filters, the Certified Project identified that on-site community risk and hazards would be reduced to less than significant levels.

The Revised Project includes changes to the proposed type of residential uses and on-site building configuration that required a revised Operational HRA. The Revised Project includes a lower residential density but the receptors would still be approximately the same distance from State Highway 24. The Revised Project also includes additional sensitive receptors at the proposed recreational facilities. Additionally, the HRA methodology has been revised since the Certified EIR. These updates include CARB's updated mobile source emission factor database (EMFAC2011) and BAAQMD's updated methodology applying age sensitivity factors to the EMFAC2011 emission rates to generate a 70-year weighted average emission rates for residential receptors. Therefore, a revised Operational HRA was prepared to determine if the previously recommended mitigation measure (Mitigation Measure AQ-3) would still be an effective mitigation, or if modification of the measure was appropriate.

SOURCE IDENTIFICATION

Properties within a 1,000-foot radius were surveyed to identify facilities that have the potential to generate hazardous and acutely hazardous air emissions. In addition, the BAAQMD has developed screening analysis tools for identifying stationary and mobile sources proximate to the Project site. For identification of high volume roadways with annual average daily traffic volumes exceeding 10,000 vehicles per day, the traffic volume linkage tool from the California Environmental Health Tracking Program (CEHTP) was used (CEHTP, 2007).

Based on a review of stationary and mobile sources using BAAQMD's screening tools, seven emission sources were identified within 1,000 feet of the Project site:

- Shell Gasoline Station, at 3255 Stanley Boulevard,
- Svensson Automotive, at 3297 Mt. Diablo Boulevard,
- Lafayette Auto Body, Inc., at 3291 Mt. Diablo Boulevard,
- Penguin Cleaners, at 3322A Mt. Diablo Boulevard,
- State Route 24,
- Pleasant Hill Road, and
- Deer Hill Road.

Potential emissions from these sources include emissions of volatile organic compounds (VOCs) from gasoline dispensing (e.g., Shell Gasoline station), from automotive refinishing operations (e.g., Svensson Automotive and Lafayette Auto Body, Inc.), and from dry cleaning operations (e.g., Penguin Cleaners). A survey of the surrounding area by PlaceWorks indicated no additional non-permitted stationary sources within a 1,000-foot radius of the Site.

State Route 24 (SR-24) is the only identified highway within 1,000 feet of the Site. Based on a review of the CEHTP traffic linkage tool, two high volume roadways, defined by BAAQMD as having more than 10,000 vehicles/day, were identified within a 1,000-foot radius of the Site (e.g., Pleasant Hill Road and Deer Hill Road). Potential emissions from these mobile sources include diesel particulate matter (DPM) from diesel trucks, total organic gases (TOG) from gasoline vehicles, and particulate matter ($PM_{2.5}$) from both diesel and gasoline vehicles traveling along SR-24 and the high volume roadways.

Figure 1, Site Location and Emission Sources, shows the locations of the emission sources with respect to the Project Site.

SOURCE CHARACTERIZATION AND RISK – ON-SITE RESIDENTS

Stationary sources within 1,000 feet of the Project site were identified using BAAQMD's Stationary Source Screening Analysis Tools (BAAQMD, 2014). Inquiry forms were submitted to BAAQMD, who provided screening level health risk and hazard values for the emission sources. The screening health risk values are summarized in Table 1, On-Site Community Risk Summary, and the Stationary Source Inquiry Form and calculated risk values are provided in an attachment to this memorandum. The BAAQMD distance adjustment multiplier was applied to the gasoline station and the dry cleaner risk value was adjusted, based on an emission rate of 0.37 lb/day obtained from BAAQMD. The results of the stationary source screening evaluation are provided in Table D1 of the attachment.

The mobile sources for the high volume roadways (State Route 24, Pleasant Hill Road, and Deer Hill Road) were screened using the BAAQMD County Surface Street Screening Tables and the BAAQMD

Table 1 On-Site Community Risk Summary

Emission Sources	Community Risk and Hazards at On-Site Receptors – Residents[a]		
	Cancer Risk (per million)	Chronic Hazards	PM2.5
Shell Gasoline Station	8.9	0.012	n/a
Svensson Automotive	0.0	0.0	0.0
Olson Brothers Body Shop	0.0	0.0	0.0
Penguin Cleaners	7.5	0.02	0.0
State Route 24	**41**	0.039	**0.38**
Pleasant Hill Road	3.6	0.020	0.14
Deer Hill Road	2.4	0.020	0.09
Threshold	10	1.0	0.3 µg/m^3
Exceeds Project Threshold Without Mitigation	**Yes**	**No**	**Yes**
State Route 24 – with Mitigation Measure AQ-3 [b]	8.7	0.01	0.17
Exceeds Project Threshold With Mitigation	**No**	**No**	**No**
	Cumulative Level Risk		
Emission Sources	**Cancer Risk (per million)**	**Chronic Hazards**	**PM2.5**
Total Cumulative Risk - Unmitigated	63	0.11	0.61
Total Cumulative Risk – with Mitigation	31	0.08	0.39
Threshold	100	100	0.8 µg/m^3
Exceeds Cumulative Threshold	**No**	**No**	**No**

[a] Since the time of the Certified EIR, methodologies evaluating vehicular emission rates have been updated, including CARB's new EMFAC 2011 model and BAAQMD's methodology applying age sensitivity factors to the updated emission factors. Therefore, the results of the HRA now show an exceedance in the excess cancer risk as well as $PM_{2.5}$ concentrations. The maximum exposed sensitive receptors are the residences nearest to State Route 24.

[b] Mitigated health risk values for State Route 24 are based on air dispersion modeling results using Lakes AERMOD View, 8.7, 2014, and included MERV10 filters for residential units (modified Mitigation Measure AQ-3). The health risk values for the remaining sources are based on BAAQMD's source screening tools for stationary sources and high volume roadways.

Highway Screening Analysis tool. The results, which are provided in Table D2 of the attachment, indicate that emissions from the surface streets, Pleasant Hill Road and Deer Hill Road, were below BAAQMD significance thresholds. However, emissions from State Route 24 resulted in a cancer risk and $PM_{2.5}$ concentrations that exceeded BAAQMD significance thresholds. Therefore, a site-specific health risk assessment (HRA) was conducted for emissions from SR 24.

The refined analysis, using the ISCST3 air dispersion model, confirmed that both toxic air contaminants (TACs), which include DPM emissions from trucks, and $PM_{2.5}$ concentrations generated from State Route 24 exceeded the BAAQMD significance thresholds, prior to mitigation. The results are provided in Table D3 of this attachment. The calculated excess cancer risk was 27 in a million and the $PM_{2.5}$ concentration was 0.38 $\mu g/m^3$ as compared to the significance thresholds of 10 in a million and 0.30 $\mu g/m^3$.

The HRA for the Certified Project reported only a $PM_{2.5}$ exposure concentration over the BAAQMD threshold; the incremental cancer risk was below the threshold. The reason for the differences in the HRA results is that the assessment methodology has been revised since the Certified Project, including updated emission factors from EMFAC2011 and the incorporation of age sensitivity factors into the emission rates, as per BAAQMD's revised methodology.

Mitigation Measure AQ-3, identified in the Certified Project, as modified below, would apply to the Revised Project and MERV 10 filters would be required to be installed in the HVAC units of the residential homes. The mitigated health risks from SR-24 emissions are summarized in Table 1; the risk spreadsheets are provided in Tables D4 and D5 of this attachment. For the mitigated scenario, it was assumed that residents would spend one hour per day outside of their homes. Table 1 also shows that the cumulative health risk from all sources does not exceed BAAQMD's cumulative thresholds for both the mitigation and unmitigated scenarios.

MITIGATION MEASURE AQ-3

The following mitigation measure was taken directly from the Certified EIR. The mitigation measure applies to and would be implemented for the Revised Project. Modifications to the original mitigation measures are identified in ~~strikeout text~~ to indicate deletions and underlined to signify additions.

> Mitigation Measure AQ-3: The applicant shall install high efficiency Minimum Efficiency Reporting Value (MERV) filters with a rating of 10 ~~9 to 12~~ in the intake of the residential ventilation systems. MERV 10 ~~9 to 12~~ filters have a Particle Size Efficiency Rating that results in an average 57.5 ~~40 percent up to 80~~ percent reduction of particulates in the 1.0 to 3.0 micron range, which includes diesel particulate matter (DPM) and $PM_{2.5}$. To ensure long-term maintenance and replacement of the MERV filters in the individual homes ~~units~~, the

~~owner/property manager~~ home buyers shall be advised to maintain and replace the MERV 10 ~~9 to 12~~ filters in accordance with the manufacturer's recommendations, which typically is after two to three months. The developer~~, sales,~~ and/or ~~rental~~ sales representative also shall provide notification to all ~~affected tenants/residents~~ buyers of the potential health risk from State Highway 24 and shall inform ~~renters~~ buyers of increased risk of exposure to DPM and $PM_{2.5}$ from State Highway 24 when the windows are open.

With implementation of Mitigation Measure AQ-3, residents of the Revised Project would not be exposed to substantial pollutant concentrations from State Route 24. Therefore, as was the case for the Certified Project, emissions from State Route 24 would not significantly impact the health of on-site Project residents with mitigation.

SOURCE CHARACTERIZATION AND RISK – PARK VISITORS

Similar to residents of the Revised Project, users of the dog park and community park would be exposed to emissions from State Route 24. While parks are defined as having sensitive receptors, the exposure duration is much less than that of the residential exposure scenario. Conservatively assuming recreational use of two hours per day and 100 days per year versus residential exposure of 24 hours per day and 350 days per year, the health risk values for users of the dog park and community park areas were determined for the unmitigated outdoor exposure scenario. The health risk values for visitors of the dog park and community park are provided in Table D3 of the attachment to this memorandum.

For TAC and $PM_{2.5}$ emissions from State Route 24, the incremental cancer risk for users of the parks is 0.63 in a million. The chronic hazard index is 0.024 and the $PM_{2.5}$ concentration is 0.01 $\mu g/m^3$. All of these values are below the BAAQMD significance thresholds. Therefore, users of the dog park and community park portions of the Revised Project would not be exposed to substantial pollutant concentrations.

CONCLUSIONS

Of the seven total stationary and mobile emission sources identified within 1,000 feet of the Revised Project Site, only the screening health risk values from State Route 24 emissions would exceed BAAQMD's thresholds. Based on a refined analysis of SR-24 emissions using an air dispersion model, both toxic air contaminants (TACs) and $PM_{2.5}$ concentrations generated from SR-24 would exceed the BAAQMD significance thresholds, prior to mitigation. The HRA for the Certified Project reported only a $PM_{2.5}$ exposure concentration over the BAAQMD threshold. The reason for the differences in the HRA results is that the assessment methodology was revised since the Certified Project, including updated

emission factors from EMFAC2011 and incorporating age sensitivity factors into the emission rates, as per BAAQMD's revised methodology.

Mitigation Measure AQ-3, identified in the Certified Project, as modified, would apply to the Revised Project and would require MERV 10 filters to be installed in the residential units. With implementation of Mitigation Measure AQ-3, residents of Revised Project would not be exposed to substantial pollutant concentrations from State Route 24. Therefore, like the Certified Project, TAC and $PM_{2.5}$ emissions from State Route 24 would not significantly impact the health of on-site Project residents. Additionally, the health risk values for users of the dog park and community park areas were conservatively determined to be below the BAAQMD significance thresholds.

Based on the information presented in this memorandum, and with implementation of modified Mitigation Measure AQ-3, hazardous air emissions generated from sources within 1,000 feet from the Revised Project Site are not anticipated to pose an actual or potential endangerment to residents and visitors of the Project.

REFERENCES

Bay Area Air Quality Management District (BAAQMD). 2014. *Stationary Source Screening Analysis Tool and Risk and Hazard Stationary Source Inquiry Form (SSIF)*. Website accessed on August 12, 2014 at http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx

California Environmental Health Tracking Program (CEHTP), 2007. Traffic linkage tool. Website accessed on June 17, 2014 at http://www.ehib.org/traffic_tool.jsp.

The Planning Center|DC&E, 2012. *Construction and Operational Health Risk Assessment for Terraces at Lafayette.* Dated February 2012.

Respectfully submitted,

PLACEWORKS

Steven J. Bush, E.I.T.

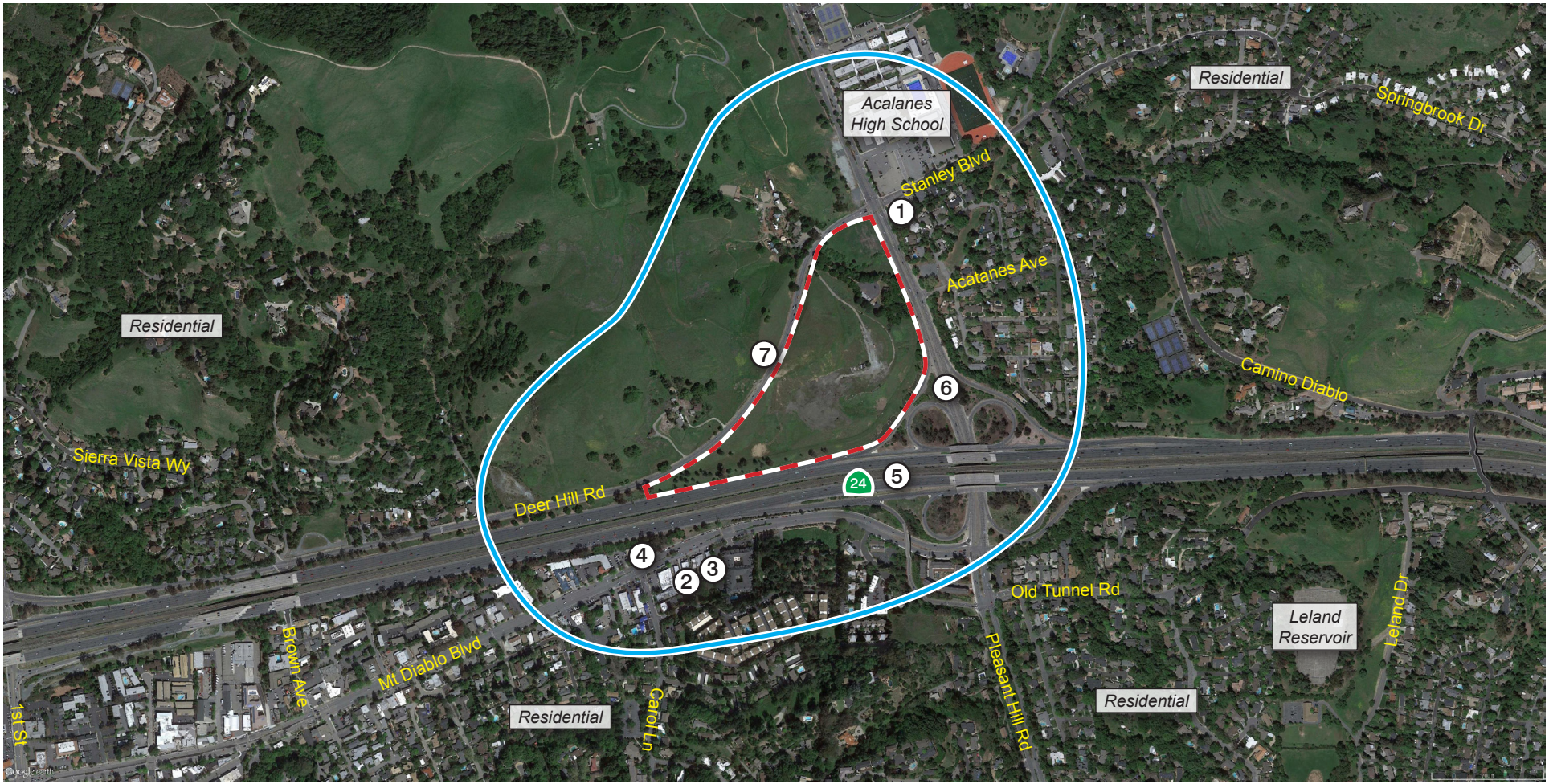
Project Scientist

Cathleen M. Fitzgerald, P.E.

Senior Engineer

Attachments

PROJECT DESCRIPTION



Site Boundary

1,000-ft Radius

1. Shell Gasoline Station
2. Svensson Automotive
3. Lafayette Auto Body, Inc
4. Penguin Cleaners
5. State Route 24
6. Pleasant Hill Road
7. Deer Hill Road

0 1,000
Scale (Feet)

Basemap Source: Google Earth Pro, 2014

PLACEWORKS

Figure 1
Site Location and Emission Sources

Bay Area Air Quality Management District
Risk & Hazard Stationary Source Inquiry Form

This form is required when users request stationary source data from BAAQMD. This form is to be used with the BAAQMD's Google Earth stationary source screening tables.

For guidance on conducting a risk & hazard screening, including for roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart

Also see the District's Recommended Methods for Screening and Modeling Local Risks and Hazards document

Table A: Requestor Contact Information	
Contact Name:	Steve Bush
Affiliation:	PlaceWorks
Phone:	510-848-3815, ext. 316
Email:	sbush@placeworks.com
Date of Request	8/12/2014
Project Name:	The Homes at Deer Hill
Address:	3233 Deer Hill Road
City:	Lafayette
County:	Contra Costa
Type (residential, commercial, mixed use, industrial, etc.):	residential
Project size (# of units, or building square feet):	22.27 acres (44 units, plus city park)
Comments:	
Please provide emission rate or generator testing information for the following identified sources. See attached map.	

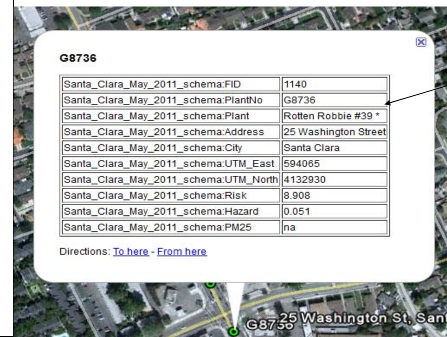
For Air District assistance, the following steps must be completed:

1. Complete all the contact and project information requested in Table A. Incomplete forms will not be processed. Please include a project site map.
2. Download and install the free program Google Earth, http://www.google.com/earth/download/ge/, and then download the county specific Google Earth stationary source application files from the District's website, http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx. The small points on the map represent stationary sources permitted by the District (Map A on right). These permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc. Click on a point to view the source's Information Table, including the name, location, and preliminary estimated cancer risk, hazard index, and PM2.5 concentration.
3. Find the project site in Google Earth by inputting the site's address in the Google Earth search box.
4. Identify stationary sources near the project. Verify that the location of the source on the map matches with the source's address in the Information Table, by using the Google Earth address search box to confirm the source's address location. Please report any mapping errors to the District.
5. List the stationary source information in Table B Section 1 below.
6. Note that a small percentage of the stationary sources have Health Risk Screening Assessment (HRSA) data INSTEAD of screening level data. These sources will be noted by an asterisk next to the Plant Name (Map B on right). If HRSA values are presented, these values have already been modeled and cannot be adjusted further.
7. Email this completed form to District staff. District staff will provide the most recent risk, hazard, and PM2.5 data that are available for the source(s). If this information or data are not available, source emissions data will be provided. Staff will respond to inquiries within three weeks.

Note that a public records request received for the same stationary source information will cancel the processing of your SSIF request.

Submit forms, maps, and questions to Alison Kirk at 415-749-5169, or akirk@baaqmd.gov .

Map B: Snapshot of Google Earth with Plant G8736 Information Table Selected Showing HRSA Values



Note the asterisk next to the plant name. This means that the values that appear below are from the HRSA. These values cannot be further adjusted using our screening tools, such as the diesel multiplier sheet. These values are based on modeling. If the Information Table says "Contact District Staff" include in Table B below.

Table B Section 1: Requestor fills out these columns based on Google Earth data							Table B Section 2: BAAQMD returns form with additional information in these columns as needed												
Distance from Receptor (feet)	Plant # or Gas Dispensary #	Facility Name	Street Address	Screening Level Cancer Risk (1)	Screening Level Hazard Index (1)	Screening Level PM2.5 (1)	Permit #s (2)	Source #s (2)	Fuel Code (3)	Type of Source(s) (4)	HRSA Ap # (5)	HRSA Date (6)	HRSA Engineer (7)	HRSA Cancer Risk in a million	Age Sensitivity Factor (8)	HRSA Adjusted Cancer Risk	HRSA Chronic Health (9)	HRSA PM2.5 Risk	Status/Comments
120	G7765	Shell Oil Company	3255 Stanley Blvd.	19.9	0.028	na												0	consider using gas station distance multiplier
480	15996	Svensson Automotive	3297 Mt. Diablo Blvd.	0.0	0.0	0.0												0	no risk
460	11563	Lafayette Auto Body, Inc.	3291 Mt. Diablo Blvd.	0.0	0.0	0.0												0	no risk
500	4969	Penguin Cleaners	3322A Mt. Diablo Blvd.	14.2	0.038	0.0	Permit # 4184 Permit # 3784	2		Permac								0	consider using screening values
																		0	
																		0	
																		0	
																		0	
																		0	
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Footnotes:

1. These Cancer Risk, Hazard Index, and PM2.5 columns represent the values in the Google Earth Plant Information Table.

2. Each plant may have multiple permits and sources.
3. Fuel codes: 98 = diesel, 189 = Natural Gas.
4. Permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc.
5. If a Health Risk Screening Assessment (HRSA) was completed for the source, the application number will be listed here.
6. The date that the HRSA was completed.
7. Engineer who completed the HRSA. For District purposes only.
8. All HRSA completed before 1/5/2010 need to be multiplied by an age sensitivity factor of 1.7.
9. The HRSA "Chronic Health" number represents the Hazard Index.
10. Further information about common sources:
    a. Sources that only include diesel internal combustion engines can be adjusted using the BAAQMD's Diesel Multiplier worksheet.
    b. The risk from natural gas boilers used for space heating when <25 MM BTU/hr would have an estimated cancer risk of one in a million or less, and a chronic hazard index of 0.003 or less. To be conservative, requestor should assume the cancer risk is 1 in a million and the hazard index is 0.003 for these sources.
    c. BAAQMD Reg 11 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010. Therefore, there is no cancer risk, hazard or PM2.5 concentrations from co-residential dry cleaning businesses in the BAAQMD.
    d. Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period, but instead should reflect the number of years perc use will continue after the project's residents or other sensitive receptors (such as students, patients, etc) take occupancy.
    e. Gas stations can be adjusted using BAAQMD's Gas Station Distance Mulitplier worksheet.
    f. Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.
    g. This spray booth is considered to be insignificant.

Date last updated:
5/30/12

BAY AREA AIR QUALITY MANAGEMENT DISTRICT Printed: AUG 15, 2014
DETAIL POLLUTANTS - ABATED
MOST RECENT P/O APPROVED (2012)

Penguin Cleaners (P# 4969)

S#	SOURCE NAME / MATERIAL	SOURCE CODE	THROUGHPUT	DATE	POLLUTANT	CODE	LBS/DAY
2	Permac, 35 lb., Secondary control [PER35S]	SE000210			Perchloroethylene	210	3.70E-01

Plant #: 4969
Plant Name: Penguin Cleaners
Number of Sources: 2

Pollutant Name	Emissions/lbs per day	Cancer Risk (in millions)
ACETALDEHYDE		0.00E+00
ACETAMIDE		0.00E+00
ACRYLAMIDE		0.00E+00
ACRYLONITRILE		0.00E+00
ALLYL CHLORIDE		0.00E+00
2-AMINOANTHRAQUINONE		0.00E+00
ANILINE		0.00E+00
ARSENIC AND COMPOUNDS (INORGANIC)[1,2]		0.00E+00
ASBESTOS [3]		0.00E+00
BENZENE[1]		0.00E+00
BENZIDINE (AND ITS SALTS) values also apply to:		0.00E+00
Benzidine based dyes		0.00E+00
Direct Black 38		0.00E+00
Direct Blue 6		0.00E+00
Direct Brown 95 (technical grade)		0.00E+00
BENZYL CHLORIDE		0.00E+00
BERYLLIUM AND COMPOUNDS[2]		0.00E+00
BIS(2-CHLOROETHYL)ETHER (Dichloroethyl ether)		0.00E+00
BIS(CHLOROMETHYL)ETHER		0.00E+00
POTASSIUM BROMATE		0.00E+00
1,3-BUTADIENE		0.00E+00
CADMIUM AND COMPOUNDS[2]		0.00E+00
CARBON TETRACHLORIDE[1] (Tetrachloromethane)		0.00E+00
CHLORINATED PARAFFINS		0.00E+00
4-CHLORO-O-PHENYLENEDIAMINE		0.00E+00
CHLOROFORM[1]		0.00E+00
PENTACHLOROPHENOL		0.00E+00
2,4,6-TRICHLOROPHENOL		0.00E+00
p-CHLORO-o-TOLUIDINE		0.00E+00
CHROMIUM 6+2		0.00E+00
Barium chromate2		0.00E+00
Calcium chromate2		0.00E+00
Lead chromate2		0.00E+00
Sodium dichromate2		0.00E+00
Strontium chromate2		0.00E+00
CHROMIC TRIOXIDE (as chromic acid mist)		0.00E+00
p-CRESIDINE		0.00E+00
CUPFERRON		0.00E+00
2,4-DIAMINOANISOLE		0.00E+00
2,4-DIAMINOTOLUENE		0.00E+00
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)		0.00E+00
1,4-DICHLOROBENZENE		0.00E+00
3,3-DICHLOROBENZIDINE		0.00E+00
1,1,-DICHLOROETHANE (Ethylidene dichloride)		0.00E+00
DI(2-ETHYLHEXYL)PHTHALATE (DEHP)		0.00E+00
p-DIMETHYLAMINOAZOBENZENE		0.00E+00
2,4-DINITROTOLUENE		0.00E+00
1,4-DIOXANE (1,4-Diethylene dioxide)		0.00E+00
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)		0.00E+00
ETHYL BENZENE		0.00E+00
ETHYLENE DIBROMIDE (1,2-Dibromoethane)		0.00E+00
ETHYLENE DICHLORIDE (1,2-Dichloroethane)		0.00E+00
ETHYLENE OXIDE (1,2-Epoxyethane)		0.00E+00
ETHYLENE THIOUREA		0.00E+00
FORMALDEHYDE		0.00E+00
HEXACHLOROBENZENE		0.00E+00
HEXACHLOROCYCLOHEXANES (mixed or technical grade)		0.00E+00
alpha-HEXACHLOROCYCLOHEXANE		0.00E+00
beta- HEXACHLOROCYCLOHEXANE		0.00E+00
gamma-HEXACHLOROCYCLOHEXANE (Lindane)		0.00E+00
HYDRAZINE		0.00E+00
LEAD AND COMPOUNDS 2,4 (inorganic) values also apply to:		0.00E+00
Lead acetate2		0.00E+00
Lead phosphate2		0.00E+00
Lead subacetate2		0.00E+00
METHYL tertiary-BUTYL ETHER		0.00E+00
4,4'-METHYLENE BIS (2-CHLOROANILINE) (MOCA)		0.00E+00
METHYLENE CHLORIDE (Dichloromethane)		0.00E+00
4,4'-METHYLENE DIANILINE (AND ITS DICHLORIDE)		0.00E+00
MICHLER'S KETONE (4,4'-Bis(dimethylamino)benzophenone)		0.00E+00
N-NITROSODI-n-BUTYLAMINE		0.00E+00
N-NITROSODI-n-PROPYLAMINE		0.00E+00
N-NITROSODIETHYLAMINE		0.00E+00
N-NITROSODIMETHYLAMINE		0.00E+00
N-NITROSODIPHENYLAMINE		0.00E+00
N-NITROSO-N-METHYLETHYLAMINE		0.00E+00
N-NITROSOMORPHOLINE		0.00E+00
N-NITROSOPIPERIDINE		0.00E+00
N-NITROSOPYRROLIDINE		0.00E+00
NICKEL AND COMPOUNDS2 (values also apply to:)		0.00E+00
Nickel acetate2		0.00E+00
Nickel carbonate2		0.00E+00
Nickel carbonyl2		0.00E+00
Nickel hydroxide2		0.00E+00
Nickelocene2		0.00E+00
NICKEL OXIDE2		0.00E+00
Nickel refinery dust from the pyrometallurgical process2		0.00E+00
Nickel subsulfide2		0.00E+00
p-NITROSODIPHENYLAMINE		0.00E+00
PARTICULATE EMISSIONS FROM DIESEL-FUELED ENGINES		0.00E+00
PERCHLOROETHYLENE (Tetrachloroethylene)	0.37	7.50E-06
PCB (POLYCHLORINATED BIPHENYLS) [low risk] 2,6		0.00E+00
PCB (POLYCHLORINATED BIPHENYLS) [high risk] 2,6		0.00E+00
POLYCHLORINATED DIBENZO-P-DIOXINS (PCDD)(AS 2,3,7,8-PCDD EQUIV) 2,7		0.00E+00
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN2,7		0.00E+00
POLYCHLORINATED DIBENZOFURANS (PCDF)(AS 2,3,7,8-PCDD EQUIV) 2,7		0.00E+00
2,3,7,8-TETRACHLORODIBENZOFURAN2,7		0.00E+00
POLYCYCLIC AROMATIC HYDROCARBON2 (PAH) (AS B(a)P-EQUIV)5		0.00E+00
BENZO(A)PYRENE2,5		0.00E+00
NAPHTHALENE		0.00E+00
1,3-PROPANE SULTONE		0.00E+00
PROPYLENE OXIDE		0.00E+00
1,1,2,2-TETRACHLOROETHANE		0.00E+00
THIOACETAMIDE		0.00E+00
Toluene diisocyantates		0.00E+00
TOLUENE-2,4-DIISOCYANATE		0.00E+00
TOLUENE-2,6-DIISOCYANATE		0.00E+00
1,1,2-TRICHLOROETHANE (Vinyl trichloride)		0.00E+00
TRICHLOROETHYLENE		0.00E+00
URETHANE (Ethyl carbamate)		0.00E+00
VINYL CHLORIDE (Chloroethylene)		0.00E+00
	TOTAL:	7.50E-06

Plant #: 4969
Plant Name: Penguin Cleaners
Number of Sources: 2

Pollutant Name	Emission/lbs per day	Chronic Hazard
ACETALDEHYDE	0	0
ACROLEIN		0
ACRYLONITRILE		0
AMMONIA		0
ARSENIC AND COMPOUNDS (INORGANIC)1,2		0
ARSINE		0
BENZENE1		0
BERYLLIUM AND COMPOUNDS2		0
1,3-BUTADIENE		0
CADMIUM AND COMPOUNDS2		0
CARBON DISULFIDE1		0
CARBON TETRACHLORIDE1 (Tetrachloromethane)		0
CHLORINE		0
CHLORINE DIOXIDE		0
CHLOROBENZENE		0
CHLOROFORM1		0
2,3,4,6-Tetrachlorophenol		0
CHLOROPICRIN		0
CHROMIUM 6+2		0
Barium chromate2		0
Calcium chromate2		0
Lead chromate2		0
Sodium dichromate2		0
Strontium chromate2		0
CHROMIC TRIOXIDE (as chromic acid mist)		0
CRESOLS		0
M-CRESOL		0
O-CRESOL		0
P-CRESOL		0
Cyanide And Compounds (inorganic)		0
HYDROGEN CYANIDE (Hydrocyanic acid)		0
1,4-DICHLOROBENZENE		0
DIETHANOLAMINE		0
DIMETHYLAMINE		0
N,N-DIMETHYL FORMAMIDE		0
1,4-DIOXANE (1,4-Diethylene dioxide)		0
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)		0
1,2-EPOXYBUTANE		0
ETHYL BENZENE		0
ETHYL CHLORIDE (Chloroethane)		0
ETHYLENE DIBROMIDE (1,2-Dibromoethane)		0
ETHYLENE DICHLORIDE (1,2-Dichloroethane)		0
ETHYLENE GLYCOL		0
ETHYLENE OXIDE (1,2-Epoxyethane)		0
Fluorides		0
HYDROGEN FLUORIDE (Hydrofluoric acid)		0
FORMALDEHYDE		0
GASOLINE VAPORS		0
GLUTARALDEHYDE		0
ETHYLENE GLYCOL ETHYL ETHER – EGEE1		0
ETHYLENE GLYCOL ETHYL ETHER ACETATE – EGEEA1		0
ETHYLENE GLYCOL METHYL ETHER – EGME1		0
ETHYLENE GLYCOL METHYL ETHER ACETATE – EGMEA		0
n-HEXANE		0
HYDRAZINE		0
HYDROCHLORIC ACID (Hydrogen chloride)		0
HYDROGEN SULFIDE		0
ISOPHORONE		0
ISOPROPYL ALCOHOL (Isopropanol)		0
MALEIC ANHYDRIDE		0
MANGANESE AND COMPOUNDS		0
MERCURY AND COMPOUNDS (INORGANIC) values also apply to:		0
Mercuric chloride		0
METHANOL		0
METHYL BROMIDE (Bromomethane)		0
METHYL tertiary-BUTYL ETHER		0
METHYL CHLOROFORM (1,1,1-Trichloroethane)		0
METHYL ISOCYANATE		0
METHYLENE CHLORIDE (Dichloromethane)		0
4,4'-METHYLENE DIANILINE (AND ITS DICHLORIDE)		0
METHYLENE DIPHENYL ISOCYANATE		0
NICKEL AND COMPOUNDS2 (values also apply to:)		0
Nickel acetate2		0
Nickel carbonate2		0
Nickel carbonyl2		0
Nickel hydroxide2		0
Nickelocene2		0
NICKEL OXIDE2		0
Nickel refinery dust from the pyrometallurgical process2		0
Nickel subsulfide2		0
NITROGEN DIOXIDE		0
PARTICULATE EMISSIONS FROM DIESEL-FUELED ENGINES		0
PERCHLOROETHYLENE (Tetrachloroethylene)	0.37	0.019956514
PHENOL		0
PHOSPHINE		0
PHOSPHORIC ACID		0
PHOSPHORUS (WHITE)		0
PHTHALIC ANHYDRIDE		0
POLYCHLORINATED DIBENZO-P-DIOXINS (PCDD)(AS 2,3,7,8-PCDD EQUIV) 2,7		0
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN2,7		0
POLYCHLORINATED DIBENZOFURANS (PCDF)(AS 2,3,7,8-PCDD EQUIV) 2,7		0
2,3,7,8-TETRACHLORODIBENZOFURAN2,7		0
1,2,3,7,8-PENTACHLORODIBENZOFURAN2,7		0
2,3,4,7,8-PENTACHLORODIBENZOFURAN2,7		0
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN2,7		0
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN2,7		0
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN2,7		0
2,3,4,6,7,8-HEXACHLORODIBENZOFURAN2,7		0
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN2,7		0
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN2,7		0
1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN2,7		0
NAPHTHALENE		0
PROPYLENE (PROPENE)		0
PROPYLENE GLYCOL MONOMETHYL ETHER		0
PROPYLENE OXIDE		0
SELENIUM AND COMPOUNDS		0
Selenium sulfide		0
SILICA (Crystalline, Respirable)		0
STYRENE		0
SULFUR DIOXIDE		0
SULFURIC ACID AND OLEUM		0
SULFURIC ACID		0
SULFUR TRIOXIDE		0
OLEUM		0
TOLUENE		0
Toluene diisocyantates		0
TOLUENE-2,4-DIISOCYANATE		0
TOLUENE-2,6-DIISOCYANATE		0
TRICHLOROETHYLENE		0
TRIETHYLAMINE		0
VINYL ACETATE		0
VINYLIDENE CHLORIDE (1,1-Dichloroethylene)		0
XYLENES (mixed isomers)		0
m-XYLENE		0
o-XYLENE		0
p-XYLENE		0
	TOTAL:	2.00E-02

Contra Costa County
PM2.5 Concentrations and Cancer Risks Generated from Surface Streets

How to use the screening tables:

- Distance is from the edge of the nearest travel lane of a street to the facility or development
- When two or more streets are within the influence area, sum the contribution from each street

$PM_{2.5}$ CONCENTRATIONS (UG/M^3)

NORTH-SOUTH DIRECTIONAL ROADWAY

Annual Average Daily Traffic	Distance East or West of Surface Street - PM2.5 Concentration (ug/m^3)						
	10 feet	50 feet	100 feet	200 feet	500 feet	700 feet	1,000 feet
1,000	No analysis required						
5,000							
10,000	0.087	0.078	0.070	0.017	0.003	0.000	0.000
20,000	0.096	0.087	0.077	0.050	0.016	0.010	0.001
30,000	0.130	0.122	0.104	0.070	0.021	0.015	0.010
40,000	0.165	0.156	0.139	0.096	0.031	0.019	0.014
50,000	0.235	0.226	0.191	0.130	0.032	0.020	0.016
60,000	0.317	0.309	0.252	0.156	0.042	0.027	0.019
70,000	0.400	0.391	0.313	0.183	0.052	0.035	0.022
80,000	0.457	0.447	0.358	0.209	0.060	0.040	0.025
90,000	0.514	0.503	0.402	0.235	0.067	0.045	0.028
100,000	0.571	0.559	0.447	0.261	0.075	0.050	0.031

EAST-WEST DIRECTIONAL ROADWAY

Annual Average Daily Traffic	Distance North or South of Surface Street - PM2.5 Concentration (ug/m^3)						
	10 feet	50 feet	100 feet	200 feet	500 feet	700 feet	1,000 feet
1,000	No analysis required						
5,000							
10,000	0.061	0.052	0.042	0.017	0.011	0.003	0.000
20,000	0.096	0.078	0.069	0.020	0.019	0.016	0.015
30,000	0.130	0.113	0.096	0.070	0.030	0.020	0.017
40,000	0.217	0.200	0.156	0.096	0.043	0.033	0.017
50,000	0.391	0.339	0.261	0.113	0.050	0.038	0.026
60,000	0.413	0.352	0.287	0.135	0.060	0.045	0.033
70,000	0.435	0.365	0.313	0.156	0.071	0.052	0.040
80,000	0.497	0.417	0.358	0.179	0.081	0.060	0.046
90,000	0.559	0.469	0.402	0.201	0.092	0.067	0.051
100,000	0.621	0.522	0.447	0.224	0.102	0.075	0.057

LIFETIME CANCER RISK

NORTH-SOUTH DIRECTIONAL ROADWAY

Annual Average Daily Traffic	Distance East or West of Surface Street - Cancer Risk (per million)						
	10 feet	50 feet	100 feet	200 feet	500 feet	700 feet	1,000 feet
1,000	No analysis required						
5,000							
10,000	2.36	2.30	1.94	0.57	0.27	0.20	0.16
20,000	2.42	2.36	2.04	1.36	0.46	0.32	0.22
30,000	3.41	3.35	2.98	2.04	0.63	0.40	0.26
40,000	4.25	4.19	3.72	2.62	0.79	0.60	0.37
50,000	6.29	6.03	5.24	3.41	1.04	0.68	0.46
60,000	8.39	8.00	6.56	4.19	1.25	0.81	0.53
70,000	10.49	9.98	7.88	4.98	1.47	0.94	0.60
80,000	11.45	11.40	9.01	5.69	1.68	1.08	0.69
90,000	13.49	12.83	10.13	6.40	1.88	1.21	0.77
100,000	14.99	14.25	11.26	7.11	2.09	1.35	0.86

EAST-WEST DIRECTIONAL ROADWAY

Annual Average Daily Traffic	Distance North or South of Surface Street - Cancer Risk (per million)						
	10 feet	50 feet	100 feet	200 feet	500 feet	700 feet	1,000 feet
1,000	No analysis required						
5,000							
10,000	1.73	1.57	1.25	0.62	0.41	0.35	0.31
20,000	2.62	2.35	1.84	1.34	0.73	0.55	0.46
30,000	3.21	3.14	2.67	1.58	0.84	0.63	0.50
40,000	5.62	5.25	4.19	2.52	1.15	0.89	0.68
50,000	9.47	8.41	6.31	3.04	1.46	1.20	0.83
60,000	10.27	9.18	7.10	3.82	1.73	1.36	1.02
70,000	11.08	9.96	7.88	4.60	1.99	1.52	1.20
80,000	12.66	11.38	9.01	5.26	2.27	1.73	1.37
90,000	14.25	12.80	10.13	5.92	2.56	1.95	1.55
100,000	15.83	14.22	11.26	6.57	2.84	2.17	1.72

- Screening tables based on meteorological data collected from Chevron Refinery in 2005.
- The maximum acute and chronic hazard index for the distances and AADT shown in the table will be less than 0.02.
- Cancer risk were estimated based on exposure from 2014 through 2084. PM2.5 concentrations were based on emissions in 2014.

Vehicle Fleet Mix Composition

Route:	24
Post Mile:	7.656
Buildout Year:	2017

Year	AADT Total	Truck %/100	2 axle %	3 axle %	4 axle %	5 axle %
2012	182,000	2.50%	57.40%	13.40%	4.50%	24.70%
2017*	188,013					

Fleet Mix Computation w/ Truck Volume Adjustment

Non-HDT	0.975
2-axle	0.014
3-axle	0.003
4-axle	0.001
5-axle	0.006
	1.000

Corrected Fleet Mix (EMFAC Vehicle Classes)

LDA	0.7800
LDT	0.1365
MDT	0.0488
HDGT	0.0081
HDDT	0.0169
MCY	0.0098
	1.000

Source: UCD, Institute of Transportation Studies, *Transporation Project-Level Carbon Monoxide Protocol* . UCD-ITS-RR-96-1

* Based on projected traffic increase of 0.65% per year from *Central County Action Plan for Routes of Regional Significance* (Contra Costa Transportation Authority, 2009).

EMFAC Worksheet

Model Version : EMFAC2011
Run Date : 8/12/2014
Scen Year : 2017
Location : Contra Costa County
Season : Annual
Model Year : Aggregated
Speed : 55 mph

Table A: Estimated Travel Fractions

	LDA GAS	LDA DSL	LDA ALL	LDT1 GAS	LDT1 DSL	LDT1 ALL	LDT2 GAS	LDT2 DSL	LDT2 ALL
%VEH	4.75E-01	2.01E-03	4.77E-01	5.87E-02	7.89E-05	5.88E-02	1.60E-01	7.84E-05	1.60E-01
	MDV GAS	MDV DSL	MDV ALL	LHD1 GAS	LHD1 DSL	LHD1 ALL	LHD2 GAS	LHD2 DSL	LHD2 ALL
%VEH	1.31E-01	1.36E-04	1.31E-01	1.73E-02	2.14E-02	3.87E-02	1.26E-03	5.54E-03	6.80E-03
	T6 GAS	T6 DSL	T6 ALL	T7 GAS	T7 DSL	T7 ALL	OBUS GAS	OBUS DSL	OBUS ALL
%VEH	3.93E-03	2.42E-02	2.81E-02	1.15E-03	8.06E-02	8.17E-02	1.78E-03	1.79E-03	3.57E-03
	UBUS GAS	UBUS DSL	UBUS ALL	MCY GAS	MCY DSL	MCY ALL	SBUS GAS	SBUS DSL	SBUS ALL
%VEH	2.45E-04	8.10E-04	1.05E-03	5.77E-03	0.00E+00	5.77E-03	1.42E-04	1.78E-03	1.92E-03
	MH GAS	MH DSL	MH ALL	ALL GAS	ALL DSL	ALL ALL			
%VEH	4.35E-03	9.77E-04	5.33E-03	8.61E-01	1.39E-01	1.00E+00			

Table B: Vehicle Fleet Mix

Class	Fraction
LDA	0.7800
LDT	0.1365
MDT	0.0488
HDTG	0.0081
HDTD	0.0169
MCY	0.0098

Table C: Population Profile

AADT 188,013

Class	All	Fraction	Gas	Fraction	Diesel	Fraction
LDA	146650	1.000	146032	0.996	618	0.004
LDT1	6908	0.269	6899	0.999	9	0.001
LDT2	18755	0.731	18746	0.9995	9	0.0005
MDV	6809	0.743	6802	0.999	7	0.001
LHD1	2004	0.219	895	0.446	1110	0.554
LHD2	352	0.038	65	0.185	287	0.815
MH	206	0.044	168	0.817	38	0.183
T6	1087	0.231	152	0.139	935	0.861
T7	3155	0.671	44	0.014	3110	0.986
SBUS	74	0.016	5	0.074	69	0.926
OBUS	138	0.029	69	0.498	69	0.502
UBUS	41	0.009	9	0.232	31	0.768
MCY	1833	1.000	1833	1.000	0	0.000
Total	188013		**181720**		**6293**	

Highway Parameters

Link Measurements							
Link/Segment	Link length (m)	Width of roadway (m)	Source Separation (m)	No. of Sources	Source Designation	Freeway Configuration	Mile Post
SR-24	942	70	70	13	101-113	At-Grade	7.656

Link Volumes							
Link/Segment	2012 Vehicle Total (AADT)	2017 Vehicle Total (AADT)*	Volume Baseline All Vehicles	Number of TOG Vehicles	Volume Baseline TOG Vehicles	Number of Diesel Vehicles	Volume Baseline Diesel Vehicles
SR-24	182,000	188,013	7,834	181,720	7,572	6,293	262

* Based on projected traffic increase of 0.65% per year from *Central County Action Plan for Routes of Regional Significance* (Contra Costa Transportation Authority, 2009).

Sensitivity Weighting Factors

Adjusting the EMFAC2011 emission factors to account for age sensivity factors for health risk characterization.

Risk Year	Modeling Year	Period	ASF[1]	SWF	Weighting Factor		55 mph - Emission Factors (g/mi)		
							TAC's		CAP's[4]
					Period	Factor	TOG-gas	PM10-dsl	PM2.5
1	2017	1	10	0.142	2017-2019	0.209	0.0600	0.0786	**0.0112**
2	2018	1	10	0.142					
3 [1]	2019	1	4.75	0.068					
4	2020	1	3	0.043	2020-2024	0.127	0.0471	0.0710	
5	2021	1	3	0.043					
6	2022	1	3	0.043					
7	2023	1	3	0.043					
8	2024	1	3	0.043					
9	2025	1	3	0.043	2025-2029	0.127	0.0391	0.0665	
10	2026	1	3	0.043					
11	2027	1	3	0.043					
12	2028	1	3	0.043					
13	2029	1	3	0.043					
14	2030	1	3	0.043	2030-2034	0.097	0.0360	0.0648	
15	2031	1	3	0.043					
16	2032	1	3	0.043					
17 [2]	2033	1	1.5	0.021					
18	2034	1	1	0.014					
19-70	2035-2086	52	1	0.744	2035-2086	0.441	0.0340	0.0654	
70-year average[3]		70		1.7		1.0	**0.0419**	**0.0689**	

[1] At age 2, the factors are weighted for 0.25 years by 10 and 0.75 years by 3.

[2] At age 16, the factors are weighted by 0.25 years at 3 and 0.75 years at 1.

[3] Represent the 70-year average emission factors, adjusted for age sensitivity, for each TAC and vehicle speed.

[4] Criteria air pollutants are analyzed for acute (short-term) health risks, and therefore worst-case concentrations are at year 2017 (buildout). Age sensitivity factors and average emission factors do not apply.

ASF - age sensitivity factor
SWF - sensitivity weighting factor

On-Road Mobile Sources
Emission Rate Computation

TOG Emissions

Emission Rate (gr/sec) = ((Emission Factor x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

Emission Factor (gr/mi) - 70-yr	0.0419

SR-24 (Sources 101-113)
Mile Post 7.656

Number of Sources	13
Link Length (meters)	942
Volume/Baseline (VPH)	7,572
Emission Rate (gr/sec) - 70-yr	**5.16E-02**

On-Road Mobile Sources
Emission Rate Computation

DPM Emissions

Emission Rate (gr/sec) = ((Emission Factor x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

Emission Factor (gr/mi) - 70-yr	0.0689

SR-24 (Sources 101-113)
Mile Post 7.656

Number of Sources	13
Link Length (meters)	942
Volume/Baseline (VPH)	262
Emission Rate (gr/sec) - 70-yr	**2.94E-03**

On-Road Mobile Souces
Emission Rate Computation

Particulate (PM2.5) Emissions

Emission Rate (gr/sec) = ((Emission Factor x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

Emission Factor (gr/mi) - 2017	0.0112

SR-24 (Sources 101-113)
Mile Post 7.656

Number of Sources	13
Link Length (meters)	942
Volume/Baseline (VPH)	7,834
Emission Rate (gr/sec) - 2017	**1.43E-02**

Initial Sigma Computation

Vertical Sigma Calculations - At-Grade and Above Grade Roadway

Initial Horizontal Dispersion Parameter (Sigma Y)
SY = (source separation distance)/2.15

Initial Vertical Dispersion Parameter (Sigma Z)
$SZ = (1.8 + 0.11(TR)) \times (60/30)^{0.2}$
TR = W2/U

Where:
W2 = traveled way half width (m)
U = average wind speed (m/s)

SR-24 (Sources 101-113)
Mile Post 7.656

Width of Traveled Way (m)	70
Average Wind Speed (m/s)	2.11
Source Separation Distance (m)	70

SY = **32.6**
SZ = **4.17**

Dist	Route	County		Postmile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak AADT	Ahead AADT
4	24	ALA	R	5.117	OAKLAND, JCT. RTE. 13	11400	142000	140000	11900	150000	147000
4	24	ALA	R	5.65	CALDECOTT LANE	11900	150000	147000	12400	156000	153000
4	24	ALA	R	6.241	ALAMEDA/CONTRA COSTA COUNTY LINE	12400	156000	153000			
4	24	CC	R	0	ALAMEDA/CONTRA COSTA COUNTY LINE				12400	156000	153000
4	24	CC	R	0.4	FISH RANCH RD (CLAREMONT AVE)	12400	156000	153000	12700	160000	157000
4	24	CC		1.196	GATEWAY BOULEVARD	12700	160000	157000	12700	160000	157000
4	24	CC	R	2.319	CAMINO PABLO	12700	160000	157000	13300	170000	164000
4	24	CC	R	3.473	SAINT STEPHENS	13300	170000	164000	13200	171000	165000
4	24	CC	R	4.397	LAFAYETTE, ACALANES ROAD	13200	171000	165000	13300	173000	167000
4	24	CC	R	6.512	LAFAYETTE, OAK HILL RD/FIRST ST	13300	173000	167000	14900	188000	182000
4	24	CC	R	7.656	LAFAYETTE, PLEASANT HILL ROAD	14900	188000	182000	15000	187000	183000
4	24	CC		9.684	END OF WB LANES RTE. 24	15000	187000	183000			
5	25	MON		0	JCT. RTE. 198				30	130	100
5	25	MON		11.75	MONTEREY/SAN BENITO COUNTY LINE	30	130	100			
5	25	SBT		0	MONTEREY/SAN BENITO COUNTY LINE				70	380	300
5	25	SBT		7.3	BITTER WATER/KING CITY ROAD	70	380	300	70	550	500
5	25	SBT		21.47	JCT. RTE. 146 WEST	70	500	450	80	590	500
5	25	SBT		39.533	PAICINES, PANOCHE ROAD	120	940	730	240	2300	1900
5	25	SBT		49.014	VALLEY VIEW ROAD	240	2000	1900	1000	7900	6600
5	25	SBT		49.946	SUNNYSLOPE/PROSPECT	1150	11400	9500	2550	26500	22000
5	25	SBT		50.573	HOLLISTER, NASH ROAD	2450	25500	21000	1150	14200	14000
5	25	SBT		51.443	4TH ST	1150	14200	14000	1800	22500	21000
5	25	SBT		51.454	HOLLISTER, SAN FELIPE/BOLSA	1550	19300	18000	1450	18200	17000
5	25	SBT		52.194	BRIGGS ROAD E	1500	20300	19000	1400	15300	15000
5	25	SBT		55.134	HUDNER LANE	1550	19000	18000	1550	19000	18000
5	25	SBT		60.084	SAN BENITO/SANTA CLARA COUNTY LINE	1800	19900	18700			
4	25	SCL		0	SAN BENITO/SANTA CLARA COUNTY LINE				1900	19800	18600
4	25	SCL		2.528	GILROY, JCT. RTE. 101	1850	23400	22000			
10	26	SJ		1.11	JCT. RTE. 99				1350	22100	15500
10	26	SJ		1.897	CARDINAL AVENUE	1300	16500	13500	1100	15400	11700

RTE	DIST	CNTY	POST MILE	LEG	DESCRIPTION	VEHICLE AADT TOTAL	TRUCK AADT TOTAL	TRUCK % TOT VEH	TRUCK AADT By Axle 2	3	4	5+	% TRUCK AADT By Axle 2	3	4	5+	EAL 2-WAY (1000)	YEAR VER/ EST
024	04	ALA	R1.847	A	OAKLAND, JCT. RTES. 580 AND 980	145000	3596	2.48	2211	596	128	660	61.49	16.58	3.57	18.35	379	00V
024	04	ALA	R5.117	B	OAKLAND, JCT. RTE. 13	140000	3906	2.79	2278	546	137	945	58.33	13.97	3.51	24.2	476	00V
024	04	ALA	R5.117	A	OAKLAND, JCT. RTE. 13	147000	2955	2.01	1858	299	90	707	62.89	10.13	3.05	23.93	350	03V
024	04	ALA	R5.887	O	OAKLAND, CALDECOTT TUNNEL	153000	3458	2.26	2364	368	130	597	68.35	10.64	3.76	17.25	342	02V
024	04	CC	R2.319	A	CAMINO PABLO	164000	3756	2.29	2305	444	108	899	61.36	11.83	2.87	23.94	448	12V
024	04	CC	R7.656	B	LAFAYETTE, PLEASANT HILL ROAD	182000	4550	2.5	2612	610	205	1124	57.4	13.4	4.5	24.7	565	97E
024	04	CC	R7.656	A	LAFAYETTE, PLEASANT HILL ROAD	183000	6405	3.5	3472	737	224	1973	54.2	11.5	3.5	30.8	903	97E

EMISSION FACTOR CALCULATIONS
EMFAC 2011

EMFAC 2011 Output Calculations
2017 Estimated Annual Emission Rates
EMFAC 2007 Vehicle Categories
Contra Costa COUNTY
San Francisco Bay Area AIR BASIN
Bay Area AQMD

TOTAL EMISSION RATES (g/mi)

55 mph - Freeway Running Emission Rates

	TOG	PM10	PM2.5	CO	NOx
Gas	**0.0600**				
DSL		**0.0786**			
Total		0.0122	**0.0112**	1.3161	0.7792

		55 MPH											
		Fleet Mix Percentage	VMT (Mi/day)	TOG (g/mi)	TOG Weighted	PM10 (g/mi)	PM10 Weighted	PM2.5 (g/mi)	PM2.5 Weighted	CO (g/mi)	CO Weighted	NOx (g/mi)	NOx Weighted
LDA	GAS		672455.5	0.027907	18766	0.001296	872	0.00119	801	0.845145	568323	0.092098	61931
LDA	DSL	0.014	2845.59	0.02754	78	0.017185	49	0.01581	45	0.140995	401	0.475977	1354
LDT1	GAS		83150.67	0.073424	6105	0.002867	238	0.00264	219	2.200608	182982	0.265241	22055
LDT1	DSL	0.001	111.6774	0.052307	6	0.037276	4	0.03429	4	0.216936	24	0.606677	68
LDT2	GAS		225936.3	0.035863	8103	0.001302	294	0.00120	271	1.161737	262479	0.159853	36117
LDT2	DSL	0.001	110.9211	0.030489	3	0.019617	2	0.01805	2	0.154403	17	0.543456	60
LHD1	GAS		24443.39	0.051578	1261	0.000734	18	0.00068	17	1.094177	26745	0.55058	13458
LHD1	DSL	0.154	30321.13	0.132213	4009	0.025824	783	0.02376	720	0.598796	18156	4.0364	122388
LHD2	GAS		1779.449	0.037043	66	0.000621	1	0.00057	1	0.863945	1537	0.468164	833
LHD2	DSL	0.040	7847.332	0.117763	924	0.024271	190	0.02233	175	0.56598	4441	3.658936	28713
MCY	GAS		8164.618	2.965932	24216	0.000515	4	0.00042	3	28.01492	228731	1.300972	10622
MDV	GAS		185859	0.064146	11922	0.001549	288	0.00143	266	1.85233	344272	0.294346	54707
MDV	DSL	0.001	192.7286	0.027206	5	0.018508	4	0.01703	3	0.131971	25	0.402833	78
MH	GAS		6161.131	0.079216	488	0.000971	6	0.00089	5	2.768374	17056	0.869295	5356
MH	DSL	0.007	1383.166	0.120092	166	0.177478	245	0.16328	226	0.495273	685	6.381007	8826
OBUS	GAS		2519.422	0.109846	277	0.00036	1	0.00033	1	2.51718	6342	1.485659	3743
OBUS	DSL	0.013	2535.389	0.119869	304	0.072946	185	0.06711	170	0.68284	1731	4.799713	12169
SBUS	GAS		200.684	0.314743	63	0.001751	0	0.00147	0	9.194077	1845	1.277391	256
SBUS	DSL	0.013	2516.236	0.114897	289	0.083911	211	0.07720	194	0.385116	969	9.03826	22742
T6	GAS		5556.907	0.121454	675	0.000637	4	0.00058	3	2.950494	16396	1.268682	7050
T6	DSL	0.174	34287.44	0.097611	3347	0.093506	3206	0.08603	2950	0.48522	16637	2.840968	97410
T7	GAS		1629.807	0.589554	961	0.000439	1	0.00039	1	25.11439	40932	6.009658	9795
T7	DSL	0.578	114022.8	0.172586	19679	0.091442	10426	0.08413	9592	1.035309	118049	4.909507	559796
UBUS	GAS		346.7085	0.535038	186	0.001002	0	0.00093	0	7.546753	2617	3.564723	1236
UBUS	DSL	0.006	1146.449	0.41415	475	0.170881	196	0.15721	180	1.360959	1560	19.35126	22185
Gas Total			1218204		73088		1727		1589		1700256		227158
DSL Total		1.00	197321		29285		15502		14262		162697		875789

Note:
Total Emission Rate (g/mi)=Sum of Weighted Emission Rates(g/day)/Sum of VMTs(mi/day)

EMISSION FACTOR CALCULATIONS
EMFAC 2011

EMFAC 2011 Output Calculations
2020 Estimated Annual Emission Rates
EMFAC 2007 Vehicle Categories
Contra Costa COUNTY
San Francisco Bay Area AIR BASIN
Bay Area AQMD

TOTAL EMISSION RATES (g/mi)

55 mph - Freeway Running Emission Rates

	TOG	PM10	PM2.5	CO	NOx
Gas	**0.0471**				
DSL		**0.0710**			
Total		0.0112	0.0103	1.0499	0.5689

		55 MPH											
		Fleet Mix Percentage	VMT (Mi/day)	TOG (g/mi)	TOG Weighted	PM10 (g/mi)	PM10 Weighted	PM2.5 (g/mi)	PM2.5 Weighted	CO (g/mi)	CO Weighted	NOx (g/mi)	NOx Weighted
LDA	GAS		686947.7	0.017864	12272	0.001273	874	0.00118	811	0.623747	428482	0.070396	48359
LDA	DSL	0.014	2884.01	0.019289	56	0.011679	34	0.01075	31	0.105913	305	0.388995	1122
LDT1	GAS		85798.69	0.047213	4051	0.002408	207	0.00223	192	1.617284	138761	0.200411	17195
LDT1	DSL	0.001	118.2729	0.036456	4	0.025101	3	0.02309	3	0.158473	19	0.477347	56
LDT2	GAS		231038.7	0.023803	5499	0.00126	291	0.00117	270	0.860407	198787	0.115688	26729
LDT2	DSL	0.001	109.3922	0.024434	3	0.014586	2	0.01342	1	0.12302	13	0.478909	52
LHD1	GAS		24832.39	0.038813	964	0.000567	14	0.00053	13	0.814894	20236	0.444981	11050
LHD1	DSL	0.150	30871.97	0.114219	3526	0.02226	687	0.02048	632	0.559359	17269	3.249038	100304
LHD2	GAS		1815.583	0.021739	39	0.000414	1	0.00038	1	0.460263	836	0.346642	629
LHD2	DSL	0.039	7954.554	0.102453	815	0.021115	168	0.01943	155	0.534012	4248	2.957724	23527
MCY	GAS		8472.04	2.875121	24358	0.000358	3	0.00030	3	25.78762	218474	1.277548	10823
MDV	GAS		188954	0.050634	9567	0.001494	282	0.00138	261	1.518548	286936	0.233738	44166
MDV	DSL	0.001	191.4892	0.021914	4	0.014603	3	0.01344	3	0.109412	21	0.364628	70
MH	GAS		6312.711	0.045483	287	0.000631	4	0.00058	4	1.41305	8920	0.627388	3961
MH	DSL	0.007	1399.005	0.115308	161	0.160489	225	0.14765	207	0.492761	689	5.815127	8135
OBUS	GAS		2548.954	0.074479	190	0.000257	1	0.00024	1	1.687951	4303	1.017205	2593
OBUS	DSL	0.013	2670.84	0.115936	310	0.071964	192	0.06621	177	0.68535	1830	2.818473	7528
SBUS	GAS		204.9035	0.188739	39	0.001026	0	0.00091	0	4.852691	994	1.0539	216
SBUS	DSL	0.012	2432.249	0.07616	185	0.051514	125	0.04739	115	0.327903	798	7.812879	19003
T6	GAS		5806.873	0.070042	407	0.000369	2	0.00034	2	1.591829	9244	0.81151	4712
T6	DSL	0.169	34627.12	0.073337	2539	0.05967	2066	0.05490	1901	0.398435	13797	1.599041	55370
T7	GAS		1587.886	0.461687	733	0.000255	0	0.00023	0	23.51419	37338	5.493154	8723
T7	DSL	0.589	120951.6	0.170373	20607	0.090067	10894	0.08286	10022	1.042115	126045	3.371419	407778
UBUS	GAS		353.9983	0.527823	187	0.00095	0	0.00088	0	7.233228	2561	3.40907	1207
UBUS	DSL	0.006	1170.554	0.396356	464	0.163954	192	0.15084	177	1.333961	1561	18.52844	21689
Gas Total			1244675		58593		1680		1557		1355870		180361
DSL Total		1.00	205381		28674		14590		13423		166596		644635

Note:
Total Emission Rate (g/mi)=Sum of Weighted Emission Rates(g/day)/Sum of VMTs(mi/day)

EMISSION FACTOR CALCULATIONS
EMFAC 2011

EMFAC 2011 Output Calculations
2025 Estimated Annual Emission Rates
EMFAC 2007 Vehicle Categories
Contra Costa COUNTY
San Francisco Bay Area AIR BASIN
Bay Area AQMD

TOTAL EMISSION RATES (g/mi)

55 mph - Freeway Running Emission Rates

	TOG	PM10	PM2.5	CO	NOx
Gas	**0.0391**				
DSL		**0.0665**			
Total		0.0111	0.0102	0.8378	0.3622

			55 MPH									
		Fleet Mix Percentage	VMT (Mi/day)	TOG (g/mi)	TOG Weighted	PM10 (g/mi)	PM10 Weighted	PM2.5 (g/mi)	PM2.5 Weighted	CO (g/mi)	CO Weighted	NOx (g/mi)	NOx Weighted
LDA	GAS		713197.7	0.014125	10074	0.001374	980	0.00127	909	0.504399	359736	0.05821	41515
LDA	DSL	0.013	2948.355	0.012223	36	0.006913	20	0.00636	19	0.074846	221	0.304555	898
LDT1	GAS		88816.31	0.032187	2859	0.001964	174	0.00182	162	1.114201	98959	0.136562	12129
LDT1	DSL	0.001	122.0643	0.025542	3	0.016528	2	0.01521	2	0.11949	15	0.396972	48
LDT2	GAS		239642.7	0.018349	4397	0.001348	323	0.00125	300	0.655129	156997	0.083887	20103
LDT2	DSL	0.000	109.3628	0.016803	2	0.009397	1	0.00864	1	0.099653	11	0.409343	45
LHD1	GAS		25651.98	0.021744	558	0.00036	9	0.00033	9	0.464614	11918	0.30938	7936
LHD1	DSL	0.142	31964.32	0.087947	2811	0.017684	565	0.01627	520	0.503855	16105	2.241055	71634
LHD2	GAS		1872.578	0.011119	21	0.000227	0	0.00021	0	0.225726	423	0.221522	415
LHD2	DSL	0.037	8235.386	0.077438	638	0.016552	136	0.01523	125	0.474424	3907	1.975684	16271
MCY	GAS		8791.904	2.811659	24720	0.000266	2	0.00023	2	24.22909	213020	1.261083	11087
MDV	GAS		193318.9	0.034034	6579	0.001443	279	0.00134	259	1.089907	210700	0.163496	31607
MDV	DSL	0.001	199.595	0.012977	3	0.007666	2	0.00705	1	0.073309	15	0.283438	57
MH	GAS		6486.739	0.022502	146	0.000308	2	0.00029	2	0.547321	3550	0.381614	2475
MH	DSL	0.006	1435.357	0.102845	148	0.130262	187	0.11984	172	0.475322	682	4.763506	6837
OBUS	GAS		2598.141	0.035275	92	0.000158	0	0.00015	0	0.785471	2041	0.516602	1342
OBUS	DSL	0.013	2912.862	0.113745	331	0.067342	196	0.06195	180	0.682579	1988	1.287126	3749
SBUS	GAS		209.347	0.104117	22	0.000603	0	0.00056	0	2.433592	509	0.826896	173
SBUS	DSL	0.010	2302.255	0.089189	205	0.055659	128	0.05121	118	0.424939	978	6.705327	15437
T6	GAS		5905.729	0.031638	187	0.000202	1	0.00019	1	0.705432	4166	0.418599	2472
T6	DSL	0.168	37711.55	0.063928	2411	0.044135	1664	0.04060	1531	0.351288	13248	0.822488	31017
T7	GAS		1462.794	0.351393	514	0.000159	0	0.00015	0	22.533	32961	5.039784	7372
T7	DSL	0.603	135622.8	0.156988	21291	0.087531	11871	0.08053	10921	0.970594	131635	1.790696	242859
UBUS	GAS		361.6749	0.52733	191	0.000913	0	0.00085	0	6.932463	2507	3.270192	1183
UBUS	DSL	0.005	1195.938	0.35231	421	0.147012	176	0.13525	162	1.172207	1402	16.13653	19298
Gas Total			1288316		50359		1773		1645		1097488		139810
DSL Total		1.00	224760		28300		14949		13753		170206		408151

Note:
Total Emission Rate (g/mi)=Sum of Weighted Emission Rates(g/day)/Sum of VMTs(mi/day)

EMISSION FACTOR CALCULATIONS
EMFAC 2011

EMFAC 2011 Output Calculations
2030 Estimated Annual Emission Rates
EMFAC 2007 Vehicle Categories
Contra Costa COUNTY
San Francisco Bay Area AIR BASIN
Bay Area AQMD

TOTAL EMISSION RATES (g/mi)

55 mph - Freeway Running Emission Rates

	TOG	PM10	PM2.5	CO	NOx
Gas	**0.0360**				
DSL		**0.0648**			
Total		0.0113	0.0104	0.7532	0.3254

			55 MPH									
		Fleet Mix Percentage	VMT (Mi/day)	TOG (g/mi)	TOG Weighted	PM10 (g/mi)	PM10 Weighted	PM2.5 (g/mi)	PM2.5 Weighted	CO (g/mi)	CO Weighted	NOx (g/mi)	NOx Weighted
LDA	GAS		739958.3	0.012925	9564	0.00148	1095	0.00137	1016	0.466532	345215	0.053732	39760
LDA	DSL	0.012	3048.691	0.009511	29	0.005095	16	0.00469	14	0.059393	181	0.257451	785
LDT1	GAS		91919.05	0.022463	2065	0.0017	156	0.00158	145	0.798619	73408	0.09397	8638
LDT1	DSL	0.001	133.714	0.010114	1	0.004598	1	0.00423	1	0.060541	8	0.267178	36
LDT2	GAS		247095.8	0.016447	4064	0.001445	357	0.00134	331	0.582397	143908	0.072002	17791
LDT2	DSL	0.000	114.5405	0.012051	1	0.005596	1	0.00515	1	0.075845	9	0.331627	38
LHD1	GAS		26648.13	0.012495	333	0.000231	6	0.00021	6	0.259065	6904	0.220636	5880
LHD1	DSL	0.136	33358.49	0.068971	2301	0.014769	493	0.01359	453	0.465736	15536	1.575102	52543
LHD2	GAS		1961.849	0.007231	14	0.000142	0	0.00013	0	0.134205	263	0.15106	296
LHD2	DSL	0.035	8656.807	0.060519	524	0.013777	119	0.01267	110	0.433312	3751	1.359714	11771
MCY	GAS		9210.089	2.792939	25723	0.000244	2	0.00021	2	23.77383	218959	1.255993	11568
MDV	GAS		197594.7	0.027136	5362	0.001456	288	0.00135	267	0.909808	179773	0.125714	24840
MDV	DSL	0.001	204.6545	0.00952	2	0.005069	1	0.00466	1	0.058389	12	0.25343	52
MH	GAS		6620.083	0.012765	85	0.000152	1	0.00014	1	0.227017	1503	0.23963	1586
MH	DSL	0.006	1486.268	0.089695	133	0.095023	141	0.08742	130	0.446494	664	3.876702	5762
OBUS	GAS		2693.409	0.019311	52	0.000117	0	0.00011	0	0.401048	1080	0.299442	807
OBUS	DSL	0.013	3176.815	0.114357	363	0.068168	217	0.06271	199	0.686077	2180	1.304596	4144
SBUS	GAS		211.755	0.080292	17	0.000478	0	0.00044	0	1.835507	389	0.692373	147
SBUS	DSL	0.009	2196.986	0.112981	248	0.065223	143	0.06000	132	0.594694	1307	4.618414	10147
T6	GAS		5993.816	0.017767	106	0.000138	1	0.00013	1	0.367289	2201	0.264236	1584
T6	DSL	0.167	40907.62	0.06438	2634	0.044565	1823	0.04100	1677	0.353861	14476	0.815736	33370
T7	GAS		1389.42	0.313639	436	0.00012	0	0.00011	0	22.24985	30914	4.95292	6882
T7	DSL	0.614	150620.9	0.151786	22862	0.084686	12756	0.07791	11735	0.939981	141581	1.692888	254984
UBUS	GAS		365.835	0.24564	90	0.000655	0	0.00061	0	5.45141	1994	2.889119	1057
UBUS	DSL	0.005	1209.695	0.337582	408	0.141938	172	0.13058	158	1.126036	1362	15.40269	18633
Gas Total			1331662		47911		1908		1770		1006512		120835
DSL Total		1.00	245115		29507		15881		14611		181065		392264

Note:
Total Emission Rate (g/mi)=Sum of Weighted Emission Rates(g/day)/Sum of VMTs(mi/day)

EMISSION FACTOR CALCULATIONS
EMFAC 2011

EMFAC 2011 Output Calculations
2035 Estimated Annual Emission Rates
EMFAC 2007 Vehicle Categories
Contra Costa COUNTY
San Francisco Bay Area AIR BASIN
Bay Area AQMD

TOTAL EMISSION RATES (g/mi)

55 mph - Freeway Running Emission Rates

	TOG	PM10	PM2.5	CO	NOx
Gas	**0.0340**				
DSL		**0.0654**			
Total		0.0119	0.0109	0.7067	0.3104

		55 MPH											
		Fleet Mix Percentage	VMT (Mi/day)	TOG (g/mi)	TOG Weighted	PM10 (g/mi)	PM10 Weighted	PM2.5 (g/mi)	PM2.5 Weighted	CO (g/mi)	CO Weighted	NOx (g/mi)	NOx Weighted
LDA	GAS		764027.2	0.012118	9259	0.001497	1144	0.00139	1061	0.447432	341850	0.050807	38818
LDA	DSL	0.012	3115.375	0.008992	28	0.004801	15	0.00442	14	0.055229	172	0.241595	753
LDT1	GAS		95238.64	0.016075	1531	0.00151	144	0.00140	133	0.589566	56149	0.065096	6200
LDT1	DSL	0.000	132.2831	0.010494	1	0.004718	1	0.00434	1	0.063225	8	0.28095	37
LDT2	GAS		253894.1	0.015405	3911	0.001482	376	0.00138	349	0.54786	139098	0.065657	16670
LDT2	DSL	0.000	116.1984	0.011548	1	0.005266	1	0.00484	1	0.07187	8	0.318204	37
LHD1	GAS		27649.28	0.007803	216	0.000145	4	0.00013	4	0.148914	4117	0.170778	4722
LHD1	DSL	0.129	34619.2	0.056816	1967	0.013255	459	0.01219	422	0.445335	15417	1.167628	40422
LHD2	GAS		2032.431	0.006058	12	0.000104	0	0.00010	0	0.106217	216	0.122839	250
LHD2	DSL	0.033	8937.961	0.051785	463	0.012349	110	0.01136	102	0.420416	3758	1.050359	9388
MCY	GAS		9589.425	2.788491	26740	0.00024	2	0.00021	2	23.66503	226934	1.254826	12033
MDV	GAS		205212.1	0.021921	4498	0.001447	297	0.00134	275	0.771856	158394	0.09598	19696
MDV	DSL	0.001	209.0563	0.009487	2	0.005039	1	0.00464	1	0.057966	12	0.252155	53
MH	GAS		6755.278	0.009668	65	0.0001	1	0.00009	1	0.150505	1017	0.181579	1227
MH	DSL	0.006	1521.3	0.082877	126	0.06763	103	0.06222	95	0.427567	650	3.403856	5178
OBUS	GAS		2804.342	0.013429	38	9.99E-05	0	0.00009	0	0.255263	716	0.219148	615
OBUS	DSL	0.013	3464.687	0.114238	396	0.068119	236	0.06267	217	0.685399	2375	1.304391	4519
SBUS	GAS		214.0732	0.027685	6	0.000164	0	0.00015	0	0.617615	132	0.464727	99
SBUS	DSL	0.008	2084.03	0.138595	289	0.072443	151	0.06665	139	0.761897	1588	3.134617	6533
T6	GAS		6128.273	0.012567	77	0.000106	1	0.00010	1	0.235901	1446	0.206539	1266
T6	DSL	0.164	44077.08	0.064474	2842	0.044666	1969	0.04109	1811	0.354417	15622	0.813302	35848
T7	GAS		1380.18	0.292516	404	9.6E-05	0	0.00009	0	22.11122	30517	4.957433	6842
T7	DSL	0.629	168833.4	0.152317	25716	0.085056	14360	0.07825	13211	0.943487	159292	1.681252	283851
UBUS	GAS		369.84	0.120094	44	0.000183	0	0.00017	0	2.684389	993	2.028349	750
UBUS	DSL	0.005	1222.938	0.272873	334	0.116339	142	0.10703	131	0.810814	992	11.76248	14385
Gas Total			1375295		46802		1969		1827		961580		109187
DSL Total		1.00	268334		32165		17548		16144		199894		401004

Note:
Total Emission Rate (g/mi)=Sum of Weighted Emission Rates(g/day)/Sum of VMTs(mi/day)

Model Output - SR-24
DPM Emissions

Results Summary

The Homes at Deer Hill
Operational HRA - DPM

Concentration - Source Group: ALL

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		0.07878	ug/m^3	579192.75	4194907.00	122.80	0.00	0.00	

Model Output - SR-24
TOG Emissions

Results Summary

The Homes at Deer Hill
Operational HRA - TOG

Concentration - Source Group: ALL

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		1.38363	ug/m^3	579192.75	4194907.00	122.80	0.00	0.00	

Model Output - SR-24
PM2.5 Emissions

Results Summary

The Homes at Deer Hill
Operational HRA - PM2.5

Concentration - Source Group: ALL

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
ANNUAL		0.38345	ug/m^3	579192.75	4194907.00	122.80	0.00	0.00	

Model Input - SR-24
DPM Emissions

```
*** ISCST3 - VERSION 02035 ***    *** The Homes at Deer Hill                                          ***        08/21/14
                                  *** Operational HRA - DPM                                           ***        09:33:33
**MODELOPTs:                                                                                                    PAGE   1
CONC                    URBAN ELEV  FLGPOL DFAULT

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

**Intermediate Terrain Processing is Selected

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

  --  SCAVENGING/DEPOSITION LOGIC --
**Model Uses NO DRY DEPLETION.  DDPLETE =  F
**Model Uses NO WET DEPLETION.  WDPLETE =  F
**NO WET SCAVENGING Data Provided.
**NO GAS DRY DEPOSITION Data Provided.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations

**Model Uses URBAN Dispersion.

**Model Uses Regulatory DEFAULT Options:
           1. Final Plume Rise.
           2. Stack-tip Downwash.
           3. Buoyancy-induced Dispersion.
           4. Use Calms Processing Routine.
           5. Not Use Missing Data Processing Routine.
           6. Default Wind Profile Exponents.
           7. Default Vertical Potential Temperature Gradients.
           8. "Upper Bound" Values for Supersquat Buildings.
           9. No Exponential Decay for URBAN/Non-SO2

**Model Accepts Receptors on ELEV Terrain.

**Model Accepts FLAGPOLE Receptor Heights.

**Model Calculates ANNUAL Averages Only

**This Run Includes:    13 Source(s);      1 Source Group(s); and     297 Receptor(s)

**The Model Assumes A Pollutant Type of:  OTHER

**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)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours
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**Misc. Inputs:  Anem. Hgt. (m) =    10.00 ;    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 =     1.2 MB of RAM.

**Input Runstream File:          OpHRA.INP
**Output Print File:             OpHRA.OUT
**Detailed Error/Message File:   OpHRA.err
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CONC URBAN ELEV FLGPOL DFAULT

*** 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)	EMISSION RATE SCALAR VARY BY
L0000001	0	0.22600E-03	578718.1	4194722.0	95.6	4.15	32.60	4.17	HROFDY
L0000002	0	0.22600E-03	578786.8	4194736.0	96.5	4.15	32.60	4.17	HROFDY
L0000003	0	0.22600E-03	578855.4	4194750.0	97.4	4.15	32.60	4.17	HROFDY
L0000004	0	0.22600E-03	578924.1	4194764.5	98.5	4.15	32.60	4.17	HROFDY
L0000005	0	0.22600E-03	578992.8	4194778.5	99.6	4.15	32.60	4.17	HROFDY
L0000006	0	0.22600E-03	579061.5	4194792.5	101.1	4.15	32.60	4.17	HROFDY
L0000007	0	0.22600E-03	579130.2	4194806.0	103.2	4.15	32.60	4.17	HROFDY
L0000008	0	0.22600E-03	579199.1	4194819.5	104.5	4.15	32.60	4.17	HROFDY
L0000009	0	0.22600E-03	579268.2	4194830.5	103.9	4.15	32.60	4.17	HROFDY
L0000010	0	0.22600E-03	579338.0	4194837.0	101.4	4.15	32.60	4.17	HROFDY
L0000011	0	0.22600E-03	579407.9	4194842.0	99.2	4.15	32.60	4.17	HROFDY
L0000012	0	0.22600E-03	579477.9	4194846.5	97.1	4.15	32.60	4.17	HROFDY
L0000013	0	0.22600E-03	579547.8	4194851.0	95.0	4.15	32.60	4.17	HROFDY

**MODELOPTs:
CONC URBAN ELEV FLGPOL DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000001 through L0000013 ; SOURCE TYPE = VOLUME :

1	.10000E+01	2	.10000E+01	3	.10000E+01	4	.10000E+01	5	.10000E+01	6	.10000E+01
7	.10000E+01	8	.10000E+01	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.10000E+01	18	.10000E+01
19	.10000E+01	20	.10000E+01	21	.10000E+01	22	.10000E+01	23	.10000E+01	24	.10000E+01

CONC URBAN ELEV FLGPOL DFAULT

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

(578952.8,	4194847.0,	114.8,	1.8);	(578972.8,	4194847.0,	115.0,	1.8);
(578992.8,	4194847.0,	112.6,	1.8);	(579012.8,	4194847.0,	110.3,	1.8);
(578952.8,	4194867.0,	115.2,	1.8);	(578972.8,	4194867.0,	114.5,	1.8);
(578992.8,	4194867.0,	112.7,	1.8);	(579012.8,	4194867.0,	110.6,	1.8);
(579032.8,	4194867.0,	109.0,	1.8);	(579052.8,	4194867.0,	107.4,	1.8);
(579072.8,	4194867.0,	107.4,	1.8);	(579092.8,	4194867.0,	107.8,	1.8);
(578952.8,	4194887.0,	119.5,	1.8);	(578972.8,	4194887.0,	119.3,	1.8);
(578992.8,	4194887.0,	116.0,	1.8);	(579012.8,	4194887.0,	113.1,	1.8);
(579032.8,	4194887.0,	111.6,	1.8);	(579052.8,	4194887.0,	109.1,	1.8);
(579072.8,	4194887.0,	110.2,	1.8);	(579092.8,	4194887.0,	111.1,	1.8);
(579112.8,	4194887.0,	112.8,	1.8);	(579132.8,	4194887.0,	113.3,	1.8);
(579152.8,	4194887.0,	114.1,	1.8);	(578952.8,	4194907.0,	127.1,	1.8);
(578972.8,	4194907.0,	127.2,	1.8);	(578992.8,	4194907.0,	122.5,	1.8);
(579012.8,	4194907.0,	117.2,	1.8);	(579032.8,	4194907.0,	114.6,	1.8);
(579052.8,	4194907.0,	113.7,	1.8);	(579072.8,	4194907.0,	114.8,	1.8);
(579092.8,	4194907.0,	116.2,	1.8);	(579112.8,	4194907.0,	118.3,	1.8);
(579132.8,	4194907.0,	118.5,	1.8);	(579152.8,	4194907.0,	119.4,	1.8);
(579172.8,	4194907.0,	122.2,	1.8);	(579192.8,	4194907.0,	122.8,	1.8);
(579212.8,	4194907.0,	123.6,	1.8);	(579232.8,	4194907.0,	123.5,	1.8);
(579252.8,	4194907.0,	123.2,	1.8);	(578952.8,	4194927.0,	127.4,	1.8);
(578972.8,	4194927.0,	126.3,	1.8);	(578992.8,	4194927.0,	122.6,	1.8);
(579012.8,	4194927.0,	117.7,	1.8);	(579032.8,	4194927.0,	114.5,	1.8);
(579052.8,	4194927.0,	114.0,	1.8);	(579072.8,	4194927.0,	115.1,	1.8);
(579092.8,	4194927.0,	116.6,	1.8);	(579112.8,	4194927.0,	118.1,	1.8);
(579132.8,	4194927.0,	118.9,	1.8);	(579152.8,	4194927.0,	119.9,	1.8);
(579172.8,	4194927.0,	122.0,	1.8);	(579192.8,	4194927.0,	123.1,	1.8);
(579212.8,	4194927.0,	123.6,	1.8);	(579232.8,	4194927.0,	123.6,	1.8);
(579252.8,	4194927.0,	123.5,	1.8);	(579272.8,	4194927.0,	123.3,	1.8);
(579292.8,	4194927.0,	122.7,	1.8);	(578952.8,	4194947.0,	133.4,	1.8);
(578972.8,	4194947.0,	132.7,	1.8);	(578992.8,	4194947.0,	124.2,	1.8);
(579012.8,	4194947.0,	121.1,	1.8);	(579032.8,	4194947.0,	119.9,	1.8);
(579052.8,	4194947.0,	120.8,	1.8);	(579072.8,	4194947.0,	121.3,	1.8);
(579092.8,	4194947.0,	122.1,	1.8);	(579112.8,	4194947.0,	123.8,	1.8);
(579132.8,	4194947.0,	124.3,	1.8);	(579152.8,	4194947.0,	125.2,	1.8);
(579172.8,	4194947.0,	126.9,	1.8);	(579192.8,	4194947.0,	127.8,	1.8);
(579212.8,	4194947.0,	128.6,	1.8);	(579232.8,	4194947.0,	126.9,	1.8);
(579252.8,	4194947.0,	124.8,	1.8);	(579272.8,	4194947.0,	123.4,	1.8);
(579292.8,	4194947.0,	119.1,	1.8);	(578952.8,	4194967.0,	133.8,	1.8);
(578972.8,	4194967.0,	131.0,	1.8);	(578992.8,	4194967.0,	127.9,	1.8);
(579012.8,	4194967.0,	126.8,	1.8);	(579032.8,	4194967.0,	127.5,	1.8);
(579052.8,	4194967.0,	126.7,	1.8);	(579072.8,	4194967.0,	127.9,	1.8);

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( 579092.8, 4194967.0,     129.8,      1.8);        ( 579112.8, 4194967.0,     130.3,      1.8);
( 579132.8, 4194967.0,     129.7,      1.8);        ( 579152.8, 4194967.0,     129.9,      1.8);
( 579172.8, 4194967.0,     130.6,      1.8);        ( 579192.8, 4194967.0,     129.9,      1.8);
( 579212.8, 4194967.0,     128.8,      1.8);        ( 579232.8, 4194967.0,     124.3,      1.8);
( 579252.8, 4194967.0,     119.7,      1.8);        ( 579272.8, 4194967.0,     115.6,      1.8);
( 579292.8, 4194967.0,     112.7,      1.8);        ( 579312.8, 4194967.0,     110.0,      1.8);
( 578952.8, 4194987.0,     133.7,      1.8);        ( 578972.8, 4194987.0,     130.5,      1.8);
( 578992.8, 4194987.0,     128.3,      1.8);        ( 579012.8, 4194987.0,     127.3,      1.8);
( 579032.8, 4194987.0,     127.5,      1.8);        ( 579052.8, 4194987.0,     127.0,      1.8);
( 579072.8, 4194987.0,     128.3,      1.8);        ( 579092.8, 4194987.0,     129.8,      1.8);
( 579112.8, 4194987.0,     130.3,      1.8);        ( 579132.8, 4194987.0,     130.1,      1.8);
( 579152.8, 4194987.0,     130.0,      1.8);        ( 579172.8, 4194987.0,     130.5,      1.8);
( 579192.8, 4194987.0,     129.8,      1.8);        ( 579212.8, 4194987.0,     127.9,      1.8);
( 579232.8, 4194987.0,     124.3,      1.8);        ( 579252.8, 4194987.0,     119.3,      1.8);
( 579272.8, 4194987.0,     115.0,      1.8);        ( 579292.8, 4194987.0,     112.7,      1.8);
( 579312.8, 4194987.0,     109.8,      1.8);        ( 579332.8, 4194987.0,     107.2,      1.8);
( 578952.8, 4195007.0,     140.0,      1.8);        ( 578972.8, 4195007.0,     140.7,      1.8);
( 578992.8, 4195007.0,     141.6,      1.8);        ( 579012.8, 4195007.0,     139.6,      1.8);
( 579032.8, 4195007.0,     139.4,      1.8);        ( 579052.8, 4195007.0,     136.9,      1.8);
( 579072.8, 4195007.0,     136.5,      1.8);        ( 579092.8, 4195007.0,     136.9,      1.8);
( 579112.8, 4195007.0,     137.8,      1.8);        ( 579132.8, 4195007.0,     136.7,      1.8);
( 579152.8, 4195007.0,     136.6,      1.8);        ( 579172.8, 4195007.0,     134.9,      1.8);
( 579192.8, 4195007.0,     133.2,      1.8);        ( 579212.8, 4195007.0,     132.1,      1.8);
( 579232.8, 4195007.0,     127.0,      1.8);        ( 579252.8, 4195007.0,     122.7,      1.8);
( 579272.8, 4195007.0,     120.7,      1.8);        ( 579292.8, 4195007.0,     119.9,      1.8);
( 579312.8, 4195007.0,     118.7,      1.8);        ( 579332.8, 4195007.0,     118.8,      1.8);
( 578952.8, 4195027.0,     153.6,      1.8);        ( 578972.8, 4195027.0,     155.3,      1.8);
( 578992.8, 4195027.0,     156.4,      1.8);        ( 579012.8, 4195027.0,     152.4,      1.8);
( 579032.8, 4195027.0,     150.9,      1.8);        ( 579052.8, 4195027.0,     144.8,      1.8);
( 579072.8, 4195027.0,     143.3,      1.8);        ( 579092.8, 4195027.0,     143.6,      1.8);
( 579112.8, 4195027.0,     143.5,      1.8);        ( 579132.8, 4195027.0,     142.4,      1.8);
( 579152.8, 4195027.0,     142.3,      1.8);        ( 579172.8, 4195027.0,     141.4,      1.8);
( 579192.8, 4195027.0,     138.9,      1.8);        ( 579212.8, 4195027.0,     137.6,      1.8);
( 579232.8, 4195027.0,     134.4,      1.8);        ( 579252.8, 4195027.0,     130.9,      1.8);
( 579272.8, 4195027.0,     130.1,      1.8);        ( 579292.8, 4195027.0,     129.1,      1.8);
( 579312.8, 4195027.0,     126.0,      1.8);        ( 579332.8, 4195027.0,     123.5,      1.8);
( 579352.8, 4195027.0,     115.8,      1.8);        ( 578952.8, 4195047.0,     154.6,      1.8);
( 578972.8, 4195047.0,     155.4,      1.8);        ( 578992.8, 4195047.0,     156.1,      1.8);
( 579012.8, 4195047.0,     153.2,      1.8);        ( 579032.8, 4195047.0,     149.9,      1.8);
( 579052.8, 4195047.0,     145.6,      1.8);        ( 579072.8, 4195047.0,     143.8,      1.8);
( 579132.8, 4195047.0,     142.8,      1.8);        ( 579152.8, 4195047.0,     142.1,      1.8);
( 579172.8, 4195047.0,     141.4,      1.8);        ( 579192.8, 4195047.0,     139.3,      1.8);
( 579212.8, 4195047.0,     137.0,      1.8);        ( 579232.8, 4195047.0,     134.6,      1.8);
( 579252.8, 4195047.0,     131.6,      1.8);        ( 579272.8, 4195047.0,     129.9,      1.8);
( 579292.8, 4195047.0,     129.1,      1.8);        ( 579312.8, 4195047.0,     126.2,      1.8);
( 579332.8, 4195047.0,     121.9,      1.8);        ( 579352.8, 4195047.0,     115.8,      1.8);
( 578952.8, 4195067.0,     168.4,      1.8);        ( 578972.8, 4195067.0,     170.5,      1.8);
( 578992.8, 4195067.0,     171.4,      1.8);        ( 579012.8, 4195067.0,     162.3,      1.8);
( 579132.8, 4195067.0,     149.7,      1.8);        ( 579152.8, 4195067.0,     149.5,      1.8);
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CONC URBAN ELEV FLGPOL DFAULT

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

(579172.8,	4195067.0,	147.9,	1.8);	(579192.8,	4195067.0,	145.4,	1.8);
(579212.8,	4195067.0,	144.3,	1.8);	(579232.8,	4195067.0,	140.9,	1.8);
(579252.8,	4195067.0,	137.3,	1.8);	(579272.8,	4195067.0,	135.4,	1.8);
(579292.8,	4195067.0,	132.9,	1.8);	(579312.8,	4195067.0,	128.0,	1.8);
(579332.8,	4195067.0,	124.5,	1.8);	(579352.8,	4195067.0,	116.0,	1.8);
(578952.8,	4195087.0,	180.2,	1.8);	(578972.8,	4195087.0,	182.4,	1.8);
(578992.8,	4195087.0,	178.3,	1.8);	(579012.8,	4195087.0,	170.0,	1.8);
(579152.8,	4195087.0,	154.0,	1.8);	(579172.8,	4195087.0,	151.6,	1.8);
(579192.8,	4195087.0,	147.6,	1.8);	(579212.8,	4195087.0,	144.7,	1.8);
(579232.8,	4195087.0,	140.2,	1.8);	(579252.8,	4195087.0,	135.7,	1.8);
(579272.8,	4195087.0,	132.6,	1.8);	(579292.8,	4195087.0,	131.0,	1.8);
(579312.8,	4195087.0,	126.1,	1.8);	(579332.8,	4195087.0,	121.7,	1.8);
(579352.8,	4195087.0,	113.3,	1.8);	(579152.8,	4195107.0,	153.5,	1.8);
(579172.8,	4195107.0,	151.6,	1.8);	(579192.8,	4195107.0,	147.7,	1.8);
(579212.8,	4195107.0,	143.8,	1.8);	(579232.8,	4195107.0,	140.3,	1.8);
(579252.8,	4195107.0,	135.7,	1.8);	(579272.8,	4195107.0,	132.1,	1.8);
(579292.8,	4195107.0,	130.7,	1.8);	(579312.8,	4195107.0,	125.9,	1.8);
(579332.8,	4195107.0,	119.9,	1.8);	(579352.8,	4195107.0,	113.2,	1.8);
(579152.8,	4195127.0,	150.3,	1.8);	(579172.8,	4195127.0,	144.3,	1.8);
(579192.8,	4195127.0,	141.1,	1.8);	(579212.8,	4195127.0,	138.5,	1.8);
(579232.8,	4195127.0,	134.2,	1.8);	(579252.8,	4195127.0,	131.4,	1.8);
(579272.8,	4195127.0,	129.3,	1.8);	(579292.8,	4195127.0,	124.2,	1.8);
(579312.8,	4195127.0,	119.5,	1.8);	(579332.8,	4195127.0,	115.8,	1.8);
(579352.8,	4195127.0,	107.2,	1.8);	(579152.8,	4195147.0,	143.8,	1.8);
(579172.8,	4195147.0,	138.6,	1.8);	(579192.8,	4195147.0,	134.2,	1.8);
(579212.8,	4195147.0,	130.4,	1.8);	(579232.8,	4195147.0,	126.8,	1.8);
(579252.8,	4195147.0,	124.2,	1.8);	(579272.8,	4195147.0,	121.2,	1.8);
(579292.8,	4195147.0,	116.8,	1.8);	(579312.8,	4195147.0,	113.1,	1.8);
(579332.8,	4195147.0,	109.5,	1.8);	(579352.8,	4195147.0,	102.8,	1.8);
(579172.8,	4195167.0,	138.8,	1.8);	(579192.8,	4195167.0,	133.9,	1.8);
(579212.8,	4195167.0,	129.7,	1.8);	(579232.8,	4195167.0,	126.9,	1.8);
(579252.8,	4195167.0,	123.7,	1.8);	(579272.8,	4195167.0,	120.3,	1.8);
(579292.8,	4195167.0,	117.0,	1.8);	(579312.8,	4195167.0,	112.6,	1.8);
(579332.8,	4195167.0,	108.3,	1.8);	(579352.8,	4195167.0,	103.4,	1.8);
(579172.8,	4195187.0,	130.2,	1.8);	(579192.8,	4195187.0,	127.5,	1.8);
(579212.8,	4195187.0,	125.3,	1.8);	(579232.8,	4195187.0,	120.2,	1.8);
(579252.8,	4195187.0,	115.5,	1.8);	(579272.8,	4195187.0,	111.8,	1.8);
(579292.8,	4195187.0,	109.3,	1.8);	(579312.8,	4195187.0,	109.3,	1.8);
(579332.8,	4195187.0,	108.9,	1.8);	(579352.8,	4195187.0,	102.2,	1.8);
(579172.8,	4195207.0,	120.9,	1.8);	(579192.8,	4195207.0,	118.6,	1.8);
(579212.8,	4195207.0,	115.5,	1.8);	(579232.8,	4195207.0,	112.6,	1.8);

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    ( 579252.8, 4195207.0,     107.9,       1.8);         ( 579272.8, 4195207.0,     104.3,       1.8);
    ( 579292.8, 4195207.0,     104.4,       1.8);         ( 579312.8, 4195207.0,     104.7,       1.8);
    ( 579332.8, 4195207.0,     103.4,       1.8);         ( 579172.8, 4195227.0,     120.9,       1.8);
    ( 579192.8, 4195227.0,     118.0,       1.8);         ( 579212.8, 4195227.0,     114.8,       1.8);
    ( 579232.8, 4195227.0,     112.3,       1.8);         ( 579252.8, 4195227.0,     107.7,       1.8);
    ( 579272.8, 4195227.0,     104.3,       1.8);         ( 579292.8, 4195227.0,     104.3,       1.8);
    ( 579312.8, 4195227.0,     104.2,       1.8);         ( 579332.8, 4195227.0,     102.9,       1.8);
    ( 579192.8, 4195247.0,     110.4,       1.8);         ( 579212.8, 4195247.0,     108.6,       1.8);
    ( 579232.8, 4195247.0,     104.3,       1.8);         ( 579252.8, 4195247.0,     103.3,       1.8);
    ( 579272.8, 4195247.0,     102.8,       1.8);         ( 579292.8, 4195247.0,     101.1,       1.8);
    ( 579312.8, 4195247.0,     100.6,       1.8);         ( 579212.8, 4195267.0,     106.5,       1.8);
    ( 579232.8, 4195267.0,     104.9,       1.8);         ( 579252.8, 4195267.0,     103.2,       1.8);
    ( 579272.8, 4195267.0,     101.9,       1.8);         ( 579292.8, 4195267.0,     101.8,       1.8);
    ( 579312.8, 4195267.0,     100.6,       1.8);         ( 579212.8, 4195287.0,     106.2,       1.8);
    ( 579232.8, 4195287.0,     104.9,       1.8);         ( 579252.8, 4195287.0,     103.2,       1.8);
    ( 579272.8, 4195287.0,     101.8,       1.8);         ( 579292.8, 4195287.0,     101.7,       1.8);
    ( 579252.8, 4195307.0,     104.6,       1.8);         ( 579272.8, 4195307.0,     102.8,       1.8);
    ( 579292.8, 4195307.0,     101.1,       1.8);
```


* SOURCE-RECEPTOR COMBINATIONS FOR WHICH CALCULATIONS MAY NOT BE PERFORMED *
LESS THAN 1.0 METER OR 3*ZLB IN DISTANCE, OR WITHIN OPEN PIT SOURCE

SOURCE ID	- - RECEPTOR LOCATION - - XR (METERS)	YR (METERS)	DISTANCE (METERS)
L0000005	578992.8	4194847.0	-1.59

*** 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
```

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,

*** WIND PROFILE EXPONENTS ***

STABILITY	WIND SPEED CATEGORY					
CATEGORY	1	2	3	4	5	6
A	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
B	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
C	.20000E+00	.20000E+00	.20000E+00	.20000E+00	.20000E+00	.20000E+00
D	.25000E+00	.25000E+00	.25000E+00	.25000E+00	.25000E+00	.25000E+00
E	.30000E+00	.30000E+00	.30000E+00	.30000E+00	.30000E+00	.30000E+00
F	.30000E+00	.30000E+00	.30000E+00	.30000E+00	.30000E+00	.30000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY	WIND SPEED CATEGORY					
CATEGORY	1	2	3	4	5	6
A	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
B	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
C	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01

CONC URBAN ELEV FLGPOL DFAULT

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

FILE: C:\!METFI~1\BAAQMD~1\CND033~1.ASC
FORMAT: (4I2,2F9.4,F6.1,I2,2F7.1,f9.4,f10.1,f8.4,i4,f7.2)
SURFACE STATION NO.: 2903 UPPER AIR STATION NO.: 2903
NAME: UNKNOWN NAME: UNKNOWN
YEAR: 2003 YEAR: 2003

YR	MN	DY	HR	FLOW VECTOR	SPEED (M/S)	TEMP (K)	STAB CLASS	MIXING HEIGHT (M) RURAL	MIXING HEIGHT (M) URBAN	USTAR (M/S)	M-O LENGTH (M)	Z-0 (M)	IPCODE	PRATE (mm/HR)
03	01	01	01	23.8	1.00	278.5	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	02	11.2	1.00	278.0	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	03	203.2	1.00	277.0	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	04	63.5	1.00	276.8	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	05	273.5	1.00	276.3	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	06	315.6	1.00	275.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	07	10.8	1.00	276.2	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	08	4.9	1.00	276.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	09	20.0	1.00	277.5	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	10	328.1	1.00	279.0	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	11	174.8	1.03	280.9	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	12	167.4	2.32	283.6	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	13	217.3	2.50	284.9	1	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	14	205.0	2.50	285.8	1	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	15	199.3	2.41	285.4	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	16	222.7	2.55	285.6	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	17	213.3	2.24	284.6	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	18	210.9	2.10	284.0	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	19	208.8	1.12	283.2	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	20	191.7	1.12	282.5	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	21	194.1	1.07	281.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	22	183.4	1.48	282.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	23	328.2	1.61	281.4	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	24	139.3	1.03	280.7	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00

*** NOTES: STABILITY CLASS 1=A, 2=B, 3=C, 4=D, 5=E AND 6=F.
FLOW VECTOR IS DIRECTION TOWARD WHICH WIND IS BLOWING.

CONC URBAN ELEV FLGPOL DFAULT

*** THE SUMMARY OF MAXIMUM ANNUAL (3 YRS) RESULTS ***

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

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	0.07878 AT (579192.75, 4194907.00, 122.80, 1.80)	DC	NA
	2ND HIGHEST VALUE IS	0.07852 AT (579212.75, 4194907.00, 123.64, 1.80)	DC	NA
	3RD HIGHEST VALUE IS	0.07785 AT (579132.75, 4194887.00, 113.28, 1.80)	DC	NA
	4TH HIGHEST VALUE IS	0.07782 AT (579112.75, 4194887.00, 112.85, 1.80)	DC	NA
	5TH HIGHEST VALUE IS	0.07742 AT (578992.75, 4194867.00, 112.73, 1.80)	DC	NA
	6TH HIGHEST VALUE IS	0.07734 AT (579232.75, 4194907.00, 123.52, 1.80)	DC	NA
	7TH HIGHEST VALUE IS	0.07733 AT (579172.75, 4194907.00, 122.23, 1.80)	DC	NA
	8TH HIGHEST VALUE IS	0.07699 AT (579092.75, 4194887.00, 111.13, 1.80)	DC	NA
	9TH HIGHEST VALUE IS	0.07686 AT (579012.75, 4194867.00, 110.56, 1.80)	DC	NA
	10TH HIGHEST VALUE IS	0.07683 AT (579072.75, 4194887.00, 110.15, 1.80)	DC	NA

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

CONC URBAN ELEV FLGPOL DFAULT

*** Message Summary : ISCST3 Model Execution ***

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

A Total of 0 Fatal Error Message(s)
A Total of 1 Warning Message(s)
A Total of 80 Informational Message(s)

A Total of 80 Calm Hours Identified

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

******** WARNING MESSAGES ********
RE W282 449 CHK_EL:RecElev < SrcBase; See non-DFAULT HE>ZI option in MCB#9

****
*** ISCST3 Finishes Successfully ***
****

Model Input - SR-24
TOG Emissions

```
** ISCST3 - VERSION 02035 ***    *** The Homes at Deer Hill                                                    ***        08/21/14
                                   *** Operational HRA - TOG                                                    ***          09:27:55
**MODELOPTs:                                                                                                              PAGE   1
CONC                   URBAN ELEV  FLGPOL DFAULT

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

**Intermediate Terrain Processing is Selected

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

  --  SCAVENGING/DEPOSITION LOGIC --
**Model Uses NO DRY DEPLETION.  DDPLETE =  F
**Model Uses NO WET DEPLETION.  WDPLETE =  F
**NO WET SCAVENGING Data Provided.
**NO GAS DRY DEPOSITION Data Provided.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations

**Model Uses URBAN Dispersion.

**Model Uses Regulatory DEFAULT Options:
          1. Final Plume Rise.
          2. Stack-tip Downwash.
          3. Buoyancy-induced Dispersion.
          4. Use Calms Processing Routine.
          5. Not Use Missing Data Processing Routine.
          6. Default Wind Profile Exponents.
          7. Default Vertical Potential Temperature Gradients.
          8. "Upper Bound" Values for Supersquat Buildings.
          9. No Exponential Decay for URBAN/Non-SO2

**Model Accepts Receptors on ELEV Terrain.

**Model Accepts FLAGPOLE Receptor Heights.

**Model Calculates ANNUAL Averages Only

**This Run Includes:    13 Source(s);      1 Source Group(s); and     297 Receptor(s)

**The Model Assumes A Pollutant Type of:  OTHER

**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)

**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:  Anem. Hgt. (m) =    10.00 ;    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 =     1.2 MB of RAM.

**Input Runstream File:          OpHRA-TOG.INP
**Output Print File:             OpHRA-TOG.OUT
**Detailed Error/Message File:   OPHRA-~1.ERR
```

CONC URBAN ELEV FLGPOL DFAULT

*** 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)	EMISSION RATE SCALAR VARY BY
L0000001	0	0.39692E-02	578718.1	4194722.0	95.6	0.60	32.60	4.17	HROFDY
L0000002	0	0.39692E-02	578786.8	4194736.0	96.5	0.60	32.60	4.17	HROFDY
L0000003	0	0.39692E-02	578855.4	4194750.0	97.4	0.60	32.60	4.17	HROFDY
L0000004	0	0.39692E-02	578924.1	4194764.5	98.5	0.60	32.60	4.17	HROFDY
L0000005	0	0.39692E-02	578992.8	4194778.5	99.6	0.60	32.60	4.17	HROFDY
L0000006	0	0.39692E-02	579061.5	4194792.5	101.1	0.60	32.60	4.17	HROFDY
L0000007	0	0.39692E-02	579130.2	4194806.0	103.2	0.60	32.60	4.17	HROFDY
L0000008	0	0.39692E-02	579199.1	4194819.5	104.5	0.60	32.60	4.17	HROFDY
L0000009	0	0.39692E-02	579268.2	4194830.5	103.9	0.60	32.60	4.17	HROFDY
L0000010	0	0.39692E-02	579338.0	4194837.0	101.4	0.60	32.60	4.17	HROFDY
L0000011	0	0.39692E-02	579407.9	4194842.0	99.2	0.60	32.60	4.17	HROFDY
L0000012	0	0.39692E-02	579477.9	4194846.5	97.1	0.60	32.60	4.17	HROFDY
L0000013	0	0.39692E-02	579547.8	4194851.0	95.0	0.60	32.60	4.17	HROFDY

CONC URBAN ELEV FLGPOL DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

SOURCE ID = L0000001 through L0000013 ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
1	.10000E+01	2	.10000E+01	3	.10000E+01	4	.10000E+01	5	.10000E+01	6	.10000E+01
7	.10000E+01	8	.10000E+01	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.10000E+01	18	.10000E+01
19	.10000E+01	20	.10000E+01	21	.10000E+01	22	.10000E+01	23	.10000E+01	24	.10000E+01

CONC URBAN ELEV FLGPOL DFAULT

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

(578952.8,	4194847.0,	114.8,	1.8);	(578972.8,	4194847.0,	115.0,	1.8);
(578992.8,	4194847.0,	112.6,	1.8);	(579012.8,	4194847.0,	110.3,	1.8);
(578952.8,	4194867.0,	115.2,	1.8);	(578972.8,	4194867.0,	114.5,	1.8);
(578992.8,	4194867.0,	112.7,	1.8);	(579012.8,	4194867.0,	110.6,	1.8);
(579032.8,	4194867.0,	109.0,	1.8);	(579052.8,	4194867.0,	107.4,	1.8);
(579072.8,	4194867.0,	107.4,	1.8);	(579092.8,	4194867.0,	107.8,	1.8);
(578952.8,	4194887.0,	119.5,	1.8);	(578972.8,	4194887.0,	119.3,	1.8);
(578992.8,	4194887.0,	116.0,	1.8);	(579012.8,	4194887.0,	113.1,	1.8);
(579032.8,	4194887.0,	111.6,	1.8);	(579052.8,	4194887.0,	109.1,	1.8);
(579072.8,	4194887.0,	110.2,	1.8);	(579092.8,	4194887.0,	111.1,	1.8);
(579112.8,	4194887.0,	112.8,	1.8);	(579132.8,	4194887.0,	113.3,	1.8);
(579152.8,	4194887.0,	114.1,	1.8);	(578952.8,	4194907.0,	127.1,	1.8);
(578972.8,	4194907.0,	127.2,	1.8);	(578992.8,	4194907.0,	122.5,	1.8);
(579012.8,	4194907.0,	117.2,	1.8);	(579032.8,	4194907.0,	114.6,	1.8);
(579052.8,	4194907.0,	113.7,	1.8);	(579072.8,	4194907.0,	114.8,	1.8);
(579092.8,	4194907.0,	116.2,	1.8);	(579112.8,	4194907.0,	118.3,	1.8);
(579132.8,	4194907.0,	118.5,	1.8);	(579152.8,	4194907.0,	119.4,	1.8);
(579172.8,	4194907.0,	122.2,	1.8);	(579192.8,	4194907.0,	122.8,	1.8);
(579212.8,	4194907.0,	123.6,	1.8);	(579232.8,	4194907.0,	123.5,	1.8);
(579252.8,	4194907.0,	123.2,	1.8);	(578952.8,	4194927.0,	127.4,	1.8);
(578972.8,	4194927.0,	126.3,	1.8);	(578992.8,	4194927.0,	122.6,	1.8);
(579012.8,	4194927.0,	117.7,	1.8);	(579032.8,	4194927.0,	114.5,	1.8);
(579052.8,	4194927.0,	114.0,	1.8);	(579072.8,	4194927.0,	115.1,	1.8);
(579092.8,	4194927.0,	116.6,	1.8);	(579112.8,	4194927.0,	118.1,	1.8);
(579132.8,	4194927.0,	118.9,	1.8);	(579152.8,	4194927.0,	119.9,	1.8);
(579172.8,	4194927.0,	122.0,	1.8);	(579192.8,	4194927.0,	123.1,	1.8);
(579212.8,	4194927.0,	123.6,	1.8);	(579232.8,	4194927.0,	123.6,	1.8);
(579252.8,	4194927.0,	123.5,	1.8);	(579272.8,	4194927.0,	123.3,	1.8);
(579292.8,	4194927.0,	122.7,	1.8);	(578952.8,	4194947.0,	133.4,	1.8);
(578972.8,	4194947.0,	132.7,	1.8);	(578992.8,	4194947.0,	124.2,	1.8);
(579012.8,	4194947.0,	121.1,	1.8);	(579032.8,	4194947.0,	119.9,	1.8);
(579052.8,	4194947.0,	120.8,	1.8);	(579072.8,	4194947.0,	121.3,	1.8);
(579092.8,	4194947.0,	122.1,	1.8);	(579112.8,	4194947.0,	123.8,	1.8);
(579132.8,	4194947.0,	124.3,	1.8);	(579152.8,	4194947.0,	125.2,	1.8);
(579172.8,	4194947.0,	126.9,	1.8);	(579192.8,	4194947.0,	127.8,	1.8);
(579212.8,	4194947.0,	128.6,	1.8);	(579232.8,	4194947.0,	126.9,	1.8);
(579252.8,	4194947.0,	124.8,	1.8);	(579272.8,	4194947.0,	123.4,	1.8);
(579292.8,	4194947.0,	119.1,	1.8);	(578952.8,	4194967.0,	133.8,	1.8);
(578972.8,	4194967.0,	131.0,	1.8);	(578992.8,	4194967.0,	127.9,	1.8);
(579012.8,	4194967.0,	126.8,	1.8);	(579032.8,	4194967.0,	127.5,	1.8);
(579052.8,	4194967.0,	126.7,	1.8);	(579072.8,	4194967.0,	127.9,	1.8);

```
( 579092.8, 4194967.0,     129.8,      1.8);        ( 579112.8, 4194967.0,     130.3,      1.8);
( 579132.8, 4194967.0,     129.7,      1.8);        ( 579152.8, 4194967.0,     129.9,      1.8);
( 579172.8, 4194967.0,     130.6,      1.8);        ( 579192.8, 4194967.0,     129.9,      1.8);
( 579212.8, 4194967.0,     128.8,      1.8);        ( 579232.8, 4194967.0,     124.3,      1.8);
( 579252.8, 4194967.0,     119.7,      1.8);        ( 579272.8, 4194967.0,     115.6,      1.8);
( 579292.8, 4194967.0,     112.7,      1.8);        ( 579312.8, 4194967.0,     110.0,      1.8);
( 578952.8, 4194987.0,     133.7,      1.8);        ( 578972.8, 4194987.0,     130.5,      1.8);
( 578992.8, 4194987.0,     128.3,      1.8);        ( 579012.8, 4194987.0,     127.3,      1.8);
( 579032.8, 4194987.0,     127.5,      1.8);        ( 579052.8, 4194987.0,     127.0,      1.8);
( 579072.8, 4194987.0,     128.3,      1.8);        ( 579092.8, 4194987.0,     129.8,      1.8);
( 579112.8, 4194987.0,     130.3,      1.8);        ( 579132.8, 4194987.0,     130.1,      1.8);
( 579152.8, 4194987.0,     130.0,      1.8);        ( 579172.8, 4194987.0,     130.5,      1.8);
( 579192.8, 4194987.0,     129.8,      1.8);        ( 579212.8, 4194987.0,     127.9,      1.8);
( 579232.8, 4194987.0,     124.3,      1.8);        ( 579252.8, 4194987.0,     119.3,      1.8);
( 579272.8, 4194987.0,     115.0,      1.8);        ( 579292.8, 4194987.0,     112.7,      1.8);
( 579312.8, 4194987.0,     109.8,      1.8);        ( 579332.8, 4194987.0,     107.2,      1.8);
( 578952.8, 4195007.0,     140.0,      1.8);        ( 578972.8, 4195007.0,     140.7,      1.8);
( 578992.8, 4195007.0,     141.6,      1.8);        ( 579012.8, 4195007.0,     139.6,      1.8);
( 579032.8, 4195007.0,     139.4,      1.8);        ( 579052.8, 4195007.0,     136.9,      1.8);
( 579072.8, 4195007.0,     136.5,      1.8);        ( 579092.8, 4195007.0,     136.9,      1.8);
( 579112.8, 4195007.0,     137.8,      1.8);        ( 579132.8, 4195007.0,     136.7,      1.8);
( 579152.8, 4195007.0,     136.6,      1.8);        ( 579172.8, 4195007.0,     134.9,      1.8);
( 579192.8, 4195007.0,     133.2,      1.8);        ( 579212.8, 4195007.0,     132.1,      1.8);
( 579232.8, 4195007.0,     127.0,      1.8);        ( 579252.8, 4195007.0,     122.7,      1.8);
( 579272.8, 4195007.0,     120.7,      1.8);        ( 579292.8, 4195007.0,     119.9,      1.8);
( 579312.8, 4195007.0,     118.7,      1.8);        ( 579332.8, 4195007.0,     118.8,      1.8);
( 578952.8, 4195027.0,     153.6,      1.8);        ( 578972.8, 4195027.0,     155.3,      1.8);
( 578992.8, 4195027.0,     156.4,      1.8);        ( 579012.8, 4195027.0,     152.4,      1.8);
( 579032.8, 4195027.0,     150.9,      1.8);        ( 579052.8, 4195027.0,     144.8,      1.8);
( 579072.8, 4195027.0,     143.3,      1.8);        ( 579092.8, 4195027.0,     143.6,      1.8);
( 579112.8, 4195027.0,     143.5,      1.8);        ( 579132.8, 4195027.0,     142.4,      1.8);
( 579152.8, 4195027.0,     142.3,      1.8);        ( 579172.8, 4195027.0,     141.4,      1.8);
( 579192.8, 4195027.0,     138.9,      1.8);        ( 579212.8, 4195027.0,     137.6,      1.8);
( 579232.8, 4195027.0,     134.4,      1.8);        ( 579252.8, 4195027.0,     130.9,      1.8);
( 579272.8, 4195027.0,     130.1,      1.8);        ( 579292.8, 4195027.0,     129.1,      1.8);
( 579312.8, 4195027.0,     126.0,      1.8);        ( 579332.8, 4195027.0,     123.5,      1.8);
( 579352.8, 4195027.0,     115.8,      1.8);        ( 578952.8, 4195047.0,     154.6,      1.8);
( 578972.8, 4195047.0,     155.4,      1.8);        ( 578992.8, 4195047.0,     156.1,      1.8);
( 579012.8, 4195047.0,     153.2,      1.8);        ( 579032.8, 4195047.0,     149.9,      1.8);
( 579052.8, 4195047.0,     145.6,      1.8);        ( 579072.8, 4195047.0,     143.8,      1.8);
( 579132.8, 4195047.0,     142.8,      1.8);        ( 579152.8, 4195047.0,     142.1,      1.8);
( 579172.8, 4195047.0,     141.4,      1.8);        ( 579192.8, 4195047.0,     139.3,      1.8);
( 579212.8, 4195047.0,     137.0,      1.8);        ( 579232.8, 4195047.0,     134.6,      1.8);
( 579252.8, 4195047.0,     131.6,      1.8);        ( 579272.8, 4195047.0,     129.9,      1.8);
( 579292.8, 4195047.0,     129.1,      1.8);        ( 579312.8, 4195047.0,     126.2,      1.8);
( 579332.8, 4195047.0,     121.9,      1.8);        ( 579352.8, 4195047.0,     115.8,      1.8);
( 578952.8, 4195067.0,     168.4,      1.8);        ( 578972.8, 4195067.0,     170.5,      1.8);
( 578992.8, 4195067.0,     171.4,      1.8);        ( 579012.8, 4195067.0,     162.3,      1.8);
( 579132.8, 4195067.0,     149.7,      1.8);        ( 579152.8, 4195067.0,     149.5,      1.8);
```

CONC URBAN ELEV FLGPOL DFAULT

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

(579172.8,	4195067.0,	147.9,	1.8);	(579192.8,	4195067.0,	145.4,	1.8);
(579212.8,	4195067.0,	144.3,	1.8);	(579232.8,	4195067.0,	140.9,	1.8);
(579252.8,	4195067.0,	137.3,	1.8);	(579272.8,	4195067.0,	135.4,	1.8);
(579292.8,	4195067.0,	132.9,	1.8);	(579312.8,	4195067.0,	128.0,	1.8);
(579332.8,	4195067.0,	124.5,	1.8);	(579352.8,	4195067.0,	116.0,	1.8);
(578952.8,	4195087.0,	180.2,	1.8);	(578972.8,	4195087.0,	182.4,	1.8);
(578992.8,	4195087.0,	178.3,	1.8);	(579012.8,	4195087.0,	170.0,	1.8);
(579152.8,	4195087.0,	154.0,	1.8);	(579172.8,	4195087.0,	151.6,	1.8);
(579192.8,	4195087.0,	147.6,	1.8);	(579212.8,	4195087.0,	144.7,	1.8);
(579232.8,	4195087.0,	140.2,	1.8);	(579252.8,	4195087.0,	135.7,	1.8);
(579272.8,	4195087.0,	132.6,	1.8);	(579292.8,	4195087.0,	131.0,	1.8);
(579312.8,	4195087.0,	126.1,	1.8);	(579332.8,	4195087.0,	121.7,	1.8);
(579352.8,	4195087.0,	113.3,	1.8);	(579152.8,	4195107.0,	153.5,	1.8);
(579172.8,	4195107.0,	151.6,	1.8);	(579192.8,	4195107.0,	147.7,	1.8);
(579212.8,	4195107.0,	143.8,	1.8);	(579232.8,	4195107.0,	140.3,	1.8);
(579252.8,	4195107.0,	135.7,	1.8);	(579272.8,	4195107.0,	132.1,	1.8);
(579292.8,	4195107.0,	130.7,	1.8);	(579312.8,	4195107.0,	125.9,	1.8);
(579332.8,	4195107.0,	119.9,	1.8);	(579352.8,	4195107.0,	113.2,	1.8);
(579152.8,	4195127.0,	150.3,	1.8);	(579172.8,	4195127.0,	144.3,	1.8);
(579192.8,	4195127.0,	141.1,	1.8);	(579212.8,	4195127.0,	138.5,	1.8);
(579232.8,	4195127.0,	134.2,	1.8);	(579252.8,	4195127.0,	131.4,	1.8);
(579272.8,	4195127.0,	129.3,	1.8);	(579292.8,	4195127.0,	124.2,	1.8);
(579312.8,	4195127.0,	119.5,	1.8);	(579332.8,	4195127.0,	115.8,	1.8);
(579352.8,	4195127.0,	107.2,	1.8);	(579152.8,	4195147.0,	143.8,	1.8);
(579172.8,	4195147.0,	138.6,	1.8);	(579192.8,	4195147.0,	134.2,	1.8);
(579212.8,	4195147.0,	130.4,	1.8);	(579232.8,	4195147.0,	126.8,	1.8);
(579252.8,	4195147.0,	124.2,	1.8);	(579272.8,	4195147.0,	121.2,	1.8);
(579292.8,	4195147.0,	116.8,	1.8);	(579312.8,	4195147.0,	113.1,	1.8);
(579332.8,	4195147.0,	109.5,	1.8);	(579352.8,	4195147.0,	102.8,	1.8);
(579172.8,	4195167.0,	138.8,	1.8);	(579192.8,	4195167.0,	133.9,	1.8);
(579212.8,	4195167.0,	129.7,	1.8);	(579232.8,	4195167.0,	126.9,	1.8);
(579252.8,	4195167.0,	123.7,	1.8);	(579272.8,	4195167.0,	120.3,	1.8);
(579292.8,	4195167.0,	117.0,	1.8);	(579312.8,	4195167.0,	112.6,	1.8);
(579332.8,	4195167.0,	108.3,	1.8);	(579352.8,	4195167.0,	103.4,	1.8);
(579172.8,	4195187.0,	130.2,	1.8);	(579192.8,	4195187.0,	127.5,	1.8);
(579212.8,	4195187.0,	125.3,	1.8);	(579232.8,	4195187.0,	120.2,	1.8);
(579252.8,	4195187.0,	115.5,	1.8);	(579272.8,	4195187.0,	111.8,	1.8);
(579292.8,	4195187.0,	109.3,	1.8);	(579312.8,	4195187.0,	109.3,	1.8);
(579332.8,	4195187.0,	108.9,	1.8);	(579352.8,	4195187.0,	102.2,	1.8);
(579172.8,	4195207.0,	120.9,	1.8);	(579192.8,	4195207.0,	118.6,	1.8);
(579212.8,	4195207.0,	115.5,	1.8);	(579232.8,	4195207.0,	112.6,	1.8);

```
    ( 579252.8, 4195207.0,     107.9,       1.8);         ( 579272.8, 4195207.0,     104.3,       1.8);
    ( 579292.8, 4195207.0,     104.4,       1.8);         ( 579312.8, 4195207.0,     104.7,       1.8);
    ( 579332.8, 4195207.0,     103.4,       1.8);         ( 579172.8, 4195227.0,     120.9,       1.8);
    ( 579192.8, 4195227.0,     118.0,       1.8);         ( 579212.8, 4195227.0,     114.8,       1.8);
    ( 579232.8, 4195227.0,     112.3,       1.8);         ( 579252.8, 4195227.0,     107.7,       1.8);
    ( 579272.8, 4195227.0,     104.3,       1.8);         ( 579292.8, 4195227.0,     104.3,       1.8);
    ( 579312.8, 4195227.0,     104.2,       1.8);         ( 579332.8, 4195227.0,     102.9,       1.8);
    ( 579192.8, 4195247.0,     110.4,       1.8);         ( 579212.8, 4195247.0,     108.6,       1.8);
    ( 579232.8, 4195247.0,     104.3,       1.8);         ( 579252.8, 4195247.0,     103.3,       1.8);
    ( 579272.8, 4195247.0,     102.8,       1.8);         ( 579292.8, 4195247.0,     101.1,       1.8);
    ( 579312.8, 4195247.0,     100.6,       1.8);         ( 579212.8, 4195267.0,     106.5,       1.8);
    ( 579232.8, 4195267.0,     104.9,       1.8);         ( 579252.8, 4195267.0,     103.2,       1.8);
    ( 579272.8, 4195267.0,     101.9,       1.8);         ( 579292.8, 4195267.0,     101.8,       1.8);
    ( 579312.8, 4195267.0,     100.6,       1.8);         ( 579212.8, 4195287.0,     106.2,       1.8);
    ( 579232.8, 4195287.0,     104.9,       1.8);         ( 579252.8, 4195287.0,     103.2,       1.8);
    ( 579272.8, 4195287.0,     101.8,       1.8);         ( 579292.8, 4195287.0,     101.7,       1.8);
    ( 579252.8, 4195307.0,     104.6,       1.8);         ( 579272.8, 4195307.0,     102.8,       1.8);
    ( 579292.8, 4195307.0,     101.1,       1.8);
```


CONC   URBAN ELEV FLGPOL DFAULT

                    * SOURCE-RECEPTOR COMBINATIONS FOR WHICH CALCULATIONS MAY NOT BE PERFORMED *
                         LESS THAN 1.0 METER OR 3*ZLB IN DISTANCE, OR WITHIN OPEN PIT SOURCE

SOURCE ID	- - RECEPTOR LOCATION - - XR (METERS)	YR (METERS)	DISTANCE (METERS)
L0000005	578992.8	4194847.0	-1.59

*** 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
```

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,

*** WIND PROFILE EXPONENTS ***

STABILITY	WIND SPEED CATEGORY					
CATEGORY	1	2	3	4	5	6
A	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
B	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
C	.20000E+00	.20000E+00	.20000E+00	.20000E+00	.20000E+00	.20000E+00
D	.25000E+00	.25000E+00	.25000E+00	.25000E+00	.25000E+00	.25000E+00
E	.30000E+00	.30000E+00	.30000E+00	.30000E+00	.30000E+00	.30000E+00
F	.30000E+00	.30000E+00	.30000E+00	.30000E+00	.30000E+00	.30000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY	WIND SPEED CATEGORY					
CATEGORY	1	2	3	4	5	6
A	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
B	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
C	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01

CONC URBAN ELEV FLGPOL DFAULT

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

FILE: C:\!METFI~1\BAAQMD~1\CND033~1.ASC
FORMAT: (4I2,2F9.4,F6.1,I2,2F7.1,f9.4,f10.1,f8.4,i4,f7.2)
SURFACE STATION NO.: 2903 UPPER AIR STATION NO.: 2903
NAME: UNKNOWN NAME: UNKNOWN
YEAR: 2003 YEAR: 2003

YR	MN	DY	HR	FLOW VECTOR	SPEED (M/S)	TEMP (K)	STAB CLASS	MIXING HEIGHT (M) RURAL	MIXING HEIGHT (M) URBAN	USTAR (M/S)	M-O LENGTH (M)	Z-0 (M)	IPCODE	PRATE (mm/HR)
03	01	01	01	23.8	1.00	278.5	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	02	11.2	1.00	278.0	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	03	203.2	1.00	277.0	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	04	63.5	1.00	276.8	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	05	273.5	1.00	276.3	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	06	315.6	1.00	275.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	07	10.8	1.00	276.2	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	08	4.9	1.00	276.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	09	20.0	1.00	277.5	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	10	328.1	1.00	279.0	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	11	174.8	1.03	280.9	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	12	167.4	2.32	283.6	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	13	217.3	2.50	284.9	1	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	14	205.0	2.50	285.8	1	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	15	199.3	2.41	285.4	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	16	222.7	2.55	285.6	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	17	213.3	2.24	284.6	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	18	210.9	2.10	284.0	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	19	208.8	1.12	283.2	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	20	191.7	1.12	282.5	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	21	194.1	1.07	281.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	22	183.4	1.48	282.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	23	328.2	1.61	281.4	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	24	139.3	1.03	280.7	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00

*** NOTES: STABILITY CLASS 1=A, 2=B, 3=C, 4=D, 5=E AND 6=F.
FLOW VECTOR IS DIRECTION TOWARD WHICH WIND IS BLOWING.

CONC URBAN ELEV FLGPOL DFAULT

*** THE SUMMARY OF MAXIMUM ANNUAL (3 YRS) RESULTS ***

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

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	1.38363 AT (579192.75, 4194907.00, 122.80, 1.80)	DC	NA
	2ND HIGHEST VALUE IS	1.37906 AT (579212.75, 4194907.00, 123.64, 1.80)	DC	NA
	3RD HIGHEST VALUE IS	1.36733 AT (579132.75, 4194887.00, 113.28, 1.80)	DC	NA
	4TH HIGHEST VALUE IS	1.36681 AT (579112.75, 4194887.00, 112.85, 1.80)	DC	NA
	5TH HIGHEST VALUE IS	1.35968 AT (578992.75, 4194867.00, 112.73, 1.80)	DC	NA
	6TH HIGHEST VALUE IS	1.35833 AT (579232.75, 4194907.00, 123.52, 1.80)	DC	NA
	7TH HIGHEST VALUE IS	1.35821 AT (579172.75, 4194907.00, 122.23, 1.80)	DC	NA
	8TH HIGHEST VALUE IS	1.35218 AT (579092.75, 4194887.00, 111.13, 1.80)	DC	NA
	9TH HIGHEST VALUE IS	1.34993 AT (579012.75, 4194867.00, 110.56, 1.80)	DC	NA
	10TH HIGHEST VALUE IS	1.34936 AT (579072.75, 4194887.00, 110.15, 1.80)	DC	NA

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

CONC URBAN ELEV FLGPOL DFAULT

*** Message Summary : ISCST3 Model Execution ***

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

A Total of 0 Fatal Error Message(s)
A Total of 1 Warning Message(s)
A Total of 80 Informational Message(s)

A Total of 80 Calm Hours Identified

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

******** WARNING MESSAGES ********
RE W282 449 CHK_EL:RecElev < SrcBase; See non-DFAULT HE>ZI option in MCB#9

****
*** ISCST3 Finishes Successfully ***
****

Model Input - SR-24
PM2.5 Emissions

CONC URBAN ELEV FLGPOL DFAULT

*** MODEL SETUP OPTIONS SUMMARY ***

**Intermediate Terrain Processing is Selected

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

-- SCAVENGING/DEPOSITION LOGIC --
**Model Uses NO DRY DEPLETION. DDPLETE = F
**Model Uses NO WET DEPLETION. WDPLETE = F
**NO WET SCAVENGING Data Provided.
**NO GAS DRY DEPOSITION Data Provided.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations

**Model Uses URBAN Dispersion.

**Model Uses Regulatory DEFAULT Options:
1. Final Plume Rise.
2. Stack-tip Downwash.
3. Buoyancy-induced Dispersion.
4. Use Calms Processing Routine.
5. Not Use Missing Data Processing Routine.
6. Default Wind Profile Exponents.
7. Default Vertical Potential Temperature Gradients.
8. "Upper Bound" Values for Supersquat Buildings.
9. No Exponential Decay for URBAN/Non-SO2

**Model Accepts Receptors on ELEV Terrain.

**Model Accepts FLAGPOLE Receptor Heights.

**Model Calculates ANNUAL Averages Only

**This Run Includes: 13 Source(s); 1 Source Group(s); and 297 Receptor(s)

**The Model Assumes A Pollutant Type of: OTHER

**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)

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

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**Misc. Inputs:  Anem. Hgt. (m) =    10.00 ;    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 =     1.2 MB of RAM.

**Input Runstream File:          OpHRA-PM2.INP
**Output Print File:             OpHRA-PM2.OUT
**Detailed Error/Message File:   OPHRA-~1.ERR
```

**MODELOPTs:
CONC URBAN ELEV FLGPOL DFAULT

*** 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)	EMISSION RATE SCALAR VARY BY
L0000001	0	0.11000E-02	578718.1	4194722.0	95.6	0.60	32.60	4.17	HROFDY
L0000002	0	0.11000E-02	578786.8	4194736.0	96.5	0.60	32.60	4.17	HROFDY
L0000003	0	0.11000E-02	578855.4	4194750.0	97.4	0.60	32.60	4.17	HROFDY
L0000004	0	0.11000E-02	578924.1	4194764.5	98.5	0.60	32.60	4.17	HROFDY
L0000005	0	0.11000E-02	578992.8	4194778.5	99.6	0.60	32.60	4.17	HROFDY
L0000006	0	0.11000E-02	579061.5	4194792.5	101.1	0.60	32.60	4.17	HROFDY
L0000007	0	0.11000E-02	579130.2	4194806.0	103.2	0.60	32.60	4.17	HROFDY
L0000008	0	0.11000E-02	579199.1	4194819.5	104.5	0.60	32.60	4.17	HROFDY
L0000009	0	0.11000E-02	579268.2	4194830.5	103.9	0.60	32.60	4.17	HROFDY
L0000010	0	0.11000E-02	579338.0	4194837.0	101.4	0.60	32.60	4.17	HROFDY
L0000011	0	0.11000E-02	579407.9	4194842.0	99.2	0.60	32.60	4.17	HROFDY
L0000012	0	0.11000E-02	579477.9	4194846.5	97.1	0.60	32.60	4.17	HROFDY
L0000013	0	0.11000E-02	579547.8	4194851.0	95.0	0.60	32.60	4.17	HROFDY

CONC URBAN ELEV FLGPOL DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000001 through L0000013 ; SOURCE TYPE = VOLUME :

1	.10000E+01	2	.10000E+01	3	.10000E+01	4	.10000E+01	5	.10000E+01	6	.10000E+01
7	.10000E+01	8	.10000E+01	9	.10000E+01	10	.10000E+01	11	.10000E+01	12	.10000E+01
13	.10000E+01	14	.10000E+01	15	.10000E+01	16	.10000E+01	17	.10000E+01	18	.10000E+01
19	.10000E+01	20	.10000E+01	21	.10000E+01	22	.10000E+01	23	.10000E+01	24	.10000E+01

**MODELOPTs:
CONC URBAN ELEV FLGPOL DFAULT

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

(578952.8,	4194847.0,	114.8,	1.8);	(578972.8,	4194847.0,	115.0,	1.8);
(578992.8,	4194847.0,	112.6,	1.8);	(579012.8,	4194847.0,	110.3,	1.8);
(578952.8,	4194867.0,	115.2,	1.8);	(578972.8,	4194867.0,	114.5,	1.8);
(578992.8,	4194867.0,	112.7,	1.8);	(579012.8,	4194867.0,	110.6,	1.8);
(579032.8,	4194867.0,	109.0,	1.8);	(579052.8,	4194867.0,	107.4,	1.8);
(579072.8,	4194867.0,	107.4,	1.8);	(579092.8,	4194867.0,	107.8,	1.8);
(578952.8,	4194887.0,	119.5,	1.8);	(578972.8,	4194887.0,	119.3,	1.8);
(578992.8,	4194887.0,	116.0,	1.8);	(579012.8,	4194887.0,	113.1,	1.8);
(579032.8,	4194887.0,	111.6,	1.8);	(579052.8,	4194887.0,	109.1,	1.8);
(579072.8,	4194887.0,	110.2,	1.8);	(579092.8,	4194887.0,	111.1,	1.8);
(579112.8,	4194887.0,	112.8,	1.8);	(579132.8,	4194887.0,	113.3,	1.8);
(579152.8,	4194887.0,	114.1,	1.8);	(578952.8,	4194907.0,	127.1,	1.8);
(578972.8,	4194907.0,	127.2,	1.8);	(578992.8,	4194907.0,	122.5,	1.8);
(579012.8,	4194907.0,	117.2,	1.8);	(579032.8,	4194907.0,	114.6,	1.8);
(579052.8,	4194907.0,	113.7,	1.8);	(579072.8,	4194907.0,	114.8,	1.8);
(579092.8,	4194907.0,	116.2,	1.8);	(579112.8,	4194907.0,	118.3,	1.8);
(579132.8,	4194907.0,	118.5,	1.8);	(579152.8,	4194907.0,	119.4,	1.8);
(579172.8,	4194907.0,	122.2,	1.8);	(579192.8,	4194907.0,	122.8,	1.8);
(579212.8,	4194907.0,	123.6,	1.8);	(579232.8,	4194907.0,	123.5,	1.8);
(579252.8,	4194907.0,	123.2,	1.8);	(578952.8,	4194927.0,	127.4,	1.8);
(578972.8,	4194927.0,	126.3,	1.8);	(578992.8,	4194927.0,	122.6,	1.8);
(579012.8,	4194927.0,	117.7,	1.8);	(579032.8,	4194927.0,	114.5,	1.8);
(579052.8,	4194927.0,	114.0,	1.8);	(579072.8,	4194927.0,	115.1,	1.8);
(579092.8,	4194927.0,	116.6,	1.8);	(579112.8,	4194927.0,	118.1,	1.8);
(579132.8,	4194927.0,	118.9,	1.8);	(579152.8,	4194927.0,	119.9,	1.8);
(579172.8,	4194927.0,	122.0,	1.8);	(579192.8,	4194927.0,	123.1,	1.8);
(579212.8,	4194927.0,	123.6,	1.8);	(579232.8,	4194927.0,	123.6,	1.8);
(579252.8,	4194927.0,	123.5,	1.8);	(579272.8,	4194927.0,	123.3,	1.8);
(579292.8,	4194927.0,	122.7,	1.8);	(578952.8,	4194947.0,	133.4,	1.8);
(578972.8,	4194947.0,	132.7,	1.8);	(578992.8,	4194947.0,	124.2,	1.8);
(579012.8,	4194947.0,	121.1,	1.8);	(579032.8,	4194947.0,	119.9,	1.8);
(579052.8,	4194947.0,	120.8,	1.8);	(579072.8,	4194947.0,	121.3,	1.8);
(579092.8,	4194947.0,	122.1,	1.8);	(579112.8,	4194947.0,	123.8,	1.8);
(579132.8,	4194947.0,	124.3,	1.8);	(579152.8,	4194947.0,	125.2,	1.8);
(579172.8,	4194947.0,	126.9,	1.8);	(579192.8,	4194947.0,	127.8,	1.8);
(579212.8,	4194947.0,	128.6,	1.8);	(579232.8,	4194947.0,	126.9,	1.8);
(579252.8,	4194947.0,	124.8,	1.8);	(579272.8,	4194947.0,	123.4,	1.8);
(579292.8,	4194947.0,	119.1,	1.8);	(578952.8,	4194967.0,	133.8,	1.8);
(578972.8,	4194967.0,	131.0,	1.8);	(578992.8,	4194967.0,	127.9,	1.8);
(579012.8,	4194967.0,	126.8,	1.8);	(579032.8,	4194967.0,	127.5,	1.8);
(579052.8,	4194967.0,	126.7,	1.8);	(579072.8,	4194967.0,	127.9,	1.8);

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( 579092.8, 4194967.0,     129.8,      1.8);        ( 579112.8, 4194967.0,     130.3,      1.8);
( 579132.8, 4194967.0,     129.7,      1.8);        ( 579152.8, 4194967.0,     129.9,      1.8);
( 579172.8, 4194967.0,     130.6,      1.8);        ( 579192.8, 4194967.0,     129.9,      1.8);
( 579212.8, 4194967.0,     128.8,      1.8);        ( 579232.8, 4194967.0,     124.3,      1.8);
( 579252.8, 4194967.0,     119.7,      1.8);        ( 579272.8, 4194967.0,     115.6,      1.8);
( 579292.8, 4194967.0,     112.7,      1.8);        ( 579312.8, 4194967.0,     110.0,      1.8);
( 578952.8, 4194987.0,     133.7,      1.8);        ( 578972.8, 4194987.0,     130.5,      1.8);
( 578992.8, 4194987.0,     128.3,      1.8);        ( 579012.8, 4194987.0,     127.3,      1.8);
( 579032.8, 4194987.0,     127.5,      1.8);        ( 579052.8, 4194987.0,     127.0,      1.8);
( 579072.8, 4194987.0,     128.3,      1.8);        ( 579092.8, 4194987.0,     129.8,      1.8);
( 579112.8, 4194987.0,     130.3,      1.8);        ( 579132.8, 4194987.0,     130.1,      1.8);
( 579152.8, 4194987.0,     130.0,      1.8);        ( 579172.8, 4194987.0,     130.5,      1.8);
( 579192.8, 4194987.0,     129.8,      1.8);        ( 579212.8, 4194987.0,     127.9,      1.8);
( 579232.8, 4194987.0,     124.3,      1.8);        ( 579252.8, 4194987.0,     119.3,      1.8);
( 579272.8, 4194987.0,     115.0,      1.8);        ( 579292.8, 4194987.0,     112.7,      1.8);
( 579312.8, 4194987.0,     109.8,      1.8);        ( 579332.8, 4194987.0,     107.2,      1.8);
( 578952.8, 4195007.0,     140.0,      1.8);        ( 578972.8, 4195007.0,     140.7,      1.8);
( 578992.8, 4195007.0,     141.6,      1.8);        ( 579012.8, 4195007.0,     139.6,      1.8);
( 579032.8, 4195007.0,     139.4,      1.8);        ( 579052.8, 4195007.0,     136.9,      1.8);
( 579072.8, 4195007.0,     136.5,      1.8);        ( 579092.8, 4195007.0,     136.9,      1.8);
( 579112.8, 4195007.0,     137.8,      1.8);        ( 579132.8, 4195007.0,     136.7,      1.8);
( 579152.8, 4195007.0,     136.6,      1.8);        ( 579172.8, 4195007.0,     134.9,      1.8);
( 579192.8, 4195007.0,     133.2,      1.8);        ( 579212.8, 4195007.0,     132.1,      1.8);
( 579232.8, 4195007.0,     127.0,      1.8);        ( 579252.8, 4195007.0,     122.7,      1.8);
( 579272.8, 4195007.0,     120.7,      1.8);        ( 579292.8, 4195007.0,     119.9,      1.8);
( 579312.8, 4195007.0,     118.7,      1.8);        ( 579332.8, 4195007.0,     118.8,      1.8);
( 578952.8, 4195027.0,     153.6,      1.8);        ( 578972.8, 4195027.0,     155.3,      1.8);
( 578992.8, 4195027.0,     156.4,      1.8);        ( 579012.8, 4195027.0,     152.4,      1.8);
( 579032.8, 4195027.0,     150.9,      1.8);        ( 579052.8, 4195027.0,     144.8,      1.8);
( 579072.8, 4195027.0,     143.3,      1.8);        ( 579092.8, 4195027.0,     143.6,      1.8);
( 579112.8, 4195027.0,     143.5,      1.8);        ( 579132.8, 4195027.0,     142.4,      1.8);
( 579152.8, 4195027.0,     142.3,      1.8);        ( 579172.8, 4195027.0,     141.4,      1.8);
( 579192.8, 4195027.0,     138.9,      1.8);        ( 579212.8, 4195027.0,     137.6,      1.8);
( 579232.8, 4195027.0,     134.4,      1.8);        ( 579252.8, 4195027.0,     130.9,      1.8);
( 579272.8, 4195027.0,     130.1,      1.8);        ( 579292.8, 4195027.0,     129.1,      1.8);
( 579312.8, 4195027.0,     126.0,      1.8);        ( 579332.8, 4195027.0,     123.5,      1.8);
( 579352.8, 4195027.0,     115.8,      1.8);        ( 578952.8, 4195047.0,     154.6,      1.8);
( 578972.8, 4195047.0,     155.4,      1.8);        ( 578992.8, 4195047.0,     156.1,      1.8);
( 579012.8, 4195047.0,     153.2,      1.8);        ( 579032.8, 4195047.0,     149.9,      1.8);
( 579052.8, 4195047.0,     145.6,      1.8);        ( 579072.8, 4195047.0,     143.8,      1.8);
( 579132.8, 4195047.0,     142.8,      1.8);        ( 579152.8, 4195047.0,     142.1,      1.8);
( 579172.8, 4195047.0,     141.4,      1.8);        ( 579192.8, 4195047.0,     139.3,      1.8);
( 579212.8, 4195047.0,     137.0,      1.8);        ( 579232.8, 4195047.0,     134.6,      1.8);
( 579252.8, 4195047.0,     131.6,      1.8);        ( 579272.8, 4195047.0,     129.9,      1.8);
( 579292.8, 4195047.0,     129.1,      1.8);        ( 579312.8, 4195047.0,     126.2,      1.8);
( 579332.8, 4195047.0,     121.9,      1.8);        ( 579352.8, 4195047.0,     115.8,      1.8);
( 578952.8, 4195067.0,     168.4,      1.8);        ( 578972.8, 4195067.0,     170.5,      1.8);
( 578992.8, 4195067.0,     171.4,      1.8);        ( 579012.8, 4195067.0,     162.3,      1.8);
( 579132.8, 4195067.0,     149.7,      1.8);        ( 579152.8, 4195067.0,     149.5,      1.8);
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CONC URBAN ELEV FLGPOL DFAULT

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

(579172.8,	4195067.0,	147.9,	1.8);	(579192.8,	4195067.0,	145.4,	1.8);
(579212.8,	4195067.0,	144.3,	1.8);	(579232.8,	4195067.0,	140.9,	1.8);
(579252.8,	4195067.0,	137.3,	1.8);	(579272.8,	4195067.0,	135.4,	1.8);
(579292.8,	4195067.0,	132.9,	1.8);	(579312.8,	4195067.0,	128.0,	1.8);
(579332.8,	4195067.0,	124.5,	1.8);	(579352.8,	4195067.0,	116.0,	1.8);
(578952.8,	4195087.0,	180.2,	1.8);	(578972.8,	4195087.0,	182.4,	1.8);
(578992.8,	4195087.0,	178.3,	1.8);	(579012.8,	4195087.0,	170.0,	1.8);
(579152.8,	4195087.0,	154.0,	1.8);	(579172.8,	4195087.0,	151.6,	1.8);
(579192.8,	4195087.0,	147.6,	1.8);	(579212.8,	4195087.0,	144.7,	1.8);
(579232.8,	4195087.0,	140.2,	1.8);	(579252.8,	4195087.0,	135.7,	1.8);
(579272.8,	4195087.0,	132.6,	1.8);	(579292.8,	4195087.0,	131.0,	1.8);
(579312.8,	4195087.0,	126.1,	1.8);	(579332.8,	4195087.0,	121.7,	1.8);
(579352.8,	4195087.0,	113.3,	1.8);	(579152.8,	4195107.0,	153.5,	1.8);
(579172.8,	4195107.0,	151.6,	1.8);	(579192.8,	4195107.0,	147.7,	1.8);
(579212.8,	4195107.0,	143.8,	1.8);	(579232.8,	4195107.0,	140.3,	1.8);
(579252.8,	4195107.0,	135.7,	1.8);	(579272.8,	4195107.0,	132.1,	1.8);
(579292.8,	4195107.0,	130.7,	1.8);	(579312.8,	4195107.0,	125.9,	1.8);
(579332.8,	4195107.0,	119.9,	1.8);	(579352.8,	4195107.0,	113.2,	1.8);
(579152.8,	4195127.0,	150.3,	1.8);	(579172.8,	4195127.0,	144.3,	1.8);
(579192.8,	4195127.0,	141.1,	1.8);	(579212.8,	4195127.0,	138.5,	1.8);
(579232.8,	4195127.0,	134.2,	1.8);	(579252.8,	4195127.0,	131.4,	1.8);
(579272.8,	4195127.0,	129.3,	1.8);	(579292.8,	4195127.0,	124.2,	1.8);
(579312.8,	4195127.0,	119.5,	1.8);	(579332.8,	4195127.0,	115.8,	1.8);
(579352.8,	4195127.0,	107.2,	1.8);	(579152.8,	4195147.0,	143.8,	1.8);
(579172.8,	4195147.0,	138.6,	1.8);	(579192.8,	4195147.0,	134.2,	1.8);
(579212.8,	4195147.0,	130.4,	1.8);	(579232.8,	4195147.0,	126.8,	1.8);
(579252.8,	4195147.0,	124.2,	1.8);	(579272.8,	4195147.0,	121.2,	1.8);
(579292.8,	4195147.0,	116.8,	1.8);	(579312.8,	4195147.0,	113.1,	1.8);
(579332.8,	4195147.0,	109.5,	1.8);	(579352.8,	4195147.0,	102.8,	1.8);
(579172.8,	4195167.0,	138.8,	1.8);	(579192.8,	4195167.0,	133.9,	1.8);
(579212.8,	4195167.0,	129.7,	1.8);	(579232.8,	4195167.0,	126.9,	1.8);
(579252.8,	4195167.0,	123.7,	1.8);	(579272.8,	4195167.0,	120.3,	1.8);
(579292.8,	4195167.0,	117.0,	1.8);	(579312.8,	4195167.0,	112.6,	1.8);
(579332.8,	4195167.0,	108.3,	1.8);	(579352.8,	4195167.0,	103.4,	1.8);
(579172.8,	4195187.0,	130.2,	1.8);	(579192.8,	4195187.0,	127.5,	1.8);
(579212.8,	4195187.0,	125.3,	1.8);	(579232.8,	4195187.0,	120.2,	1.8);
(579252.8,	4195187.0,	115.5,	1.8);	(579272.8,	4195187.0,	111.8,	1.8);
(579292.8,	4195187.0,	109.3,	1.8);	(579312.8,	4195187.0,	109.3,	1.8);
(579332.8,	4195187.0,	108.9,	1.8);	(579352.8,	4195187.0,	102.2,	1.8);
(579172.8,	4195207.0,	120.9,	1.8);	(579192.8,	4195207.0,	118.6,	1.8);
(579212.8,	4195207.0,	115.5,	1.8);	(579232.8,	4195207.0,	112.6,	1.8);

```
    ( 579252.8, 4195207.0,     107.9,       1.8);         ( 579272.8, 4195207.0,     104.3,       1.8);
    ( 579292.8, 4195207.0,     104.4,       1.8);         ( 579312.8, 4195207.0,     104.7,       1.8);
    ( 579332.8, 4195207.0,     103.4,       1.8);         ( 579172.8, 4195227.0,     120.9,       1.8);
    ( 579192.8, 4195227.0,     118.0,       1.8);         ( 579212.8, 4195227.0,     114.8,       1.8);
    ( 579232.8, 4195227.0,     112.3,       1.8);         ( 579252.8, 4195227.0,     107.7,       1.8);
    ( 579272.8, 4195227.0,     104.3,       1.8);         ( 579292.8, 4195227.0,     104.3,       1.8);
    ( 579312.8, 4195227.0,     104.2,       1.8);         ( 579332.8, 4195227.0,     102.9,       1.8);
    ( 579192.8, 4195247.0,     110.4,       1.8);         ( 579212.8, 4195247.0,     108.6,       1.8);
    ( 579232.8, 4195247.0,     104.3,       1.8);         ( 579252.8, 4195247.0,     103.3,       1.8);
    ( 579272.8, 4195247.0,     102.8,       1.8);         ( 579292.8, 4195247.0,     101.1,       1.8);
    ( 579312.8, 4195247.0,     100.6,       1.8);         ( 579212.8, 4195267.0,     106.5,       1.8);
    ( 579232.8, 4195267.0,     104.9,       1.8);         ( 579252.8, 4195267.0,     103.2,       1.8);
    ( 579272.8, 4195267.0,     101.9,       1.8);         ( 579292.8, 4195267.0,     101.8,       1.8);
    ( 579312.8, 4195267.0,     100.6,       1.8);         ( 579212.8, 4195287.0,     106.2,       1.8);
    ( 579232.8, 4195287.0,     104.9,       1.8);         ( 579252.8, 4195287.0,     103.2,       1.8);
    ( 579272.8, 4195287.0,     101.8,       1.8);         ( 579292.8, 4195287.0,     101.7,       1.8);
    ( 579252.8, 4195307.0,     104.6,       1.8);         ( 579272.8, 4195307.0,     102.8,       1.8);
    ( 579292.8, 4195307.0,     101.1,       1.8);
```


CONC   URBAN ELEV FLGPOL DFAULT

                    * SOURCE-RECEPTOR COMBINATIONS FOR WHICH CALCULATIONS MAY NOT BE PERFORMED *
                         LESS THAN 1.0 METER OR 3*ZLB IN DISTANCE, OR WITHIN OPEN PIT SOURCE

SOURCE ID	- - RECEPTOR LOCATION - - XR (METERS)	YR (METERS)	DISTANCE (METERS)
L0000005	578992.8	4194847.0	-1.59

*** 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
```

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,

*** WIND PROFILE EXPONENTS ***

STABILITY	WIND SPEED CATEGORY					
CATEGORY	1	2	3	4	5	6
A	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
B	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
C	.20000E+00	.20000E+00	.20000E+00	.20000E+00	.20000E+00	.20000E+00
D	.25000E+00	.25000E+00	.25000E+00	.25000E+00	.25000E+00	.25000E+00
E	.30000E+00	.30000E+00	.30000E+00	.30000E+00	.30000E+00	.30000E+00
F	.30000E+00	.30000E+00	.30000E+00	.30000E+00	.30000E+00	.30000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY	WIND SPEED CATEGORY					
CATEGORY	1	2	3	4	5	6
A	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
B	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
C	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01

CONC URBAN ELEV FLGPOL DFAULT

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

FILE: C:\!METFI~1\BAAQMD~1\CND033~1.ASC
FORMAT: (4I2,2F9.4,F6.1,I2,2F7.1,f9.4,f10.1,f8.4,i4,f7.2)
SURFACE STATION NO.: 2903 UPPER AIR STATION NO.: 2903
NAME: UNKNOWN NAME: UNKNOWN
YEAR: 2003 YEAR: 2003

YR	MN	DY	HR	FLOW VECTOR	SPEED (M/S)	TEMP (K)	STAB CLASS	MIXING HEIGHT (M) RURAL	MIXING HEIGHT (M) URBAN	USTAR (M/S)	M-O LENGTH (M)	Z-0 (M)	IPCODE	PRATE (mm/HR)
03	01	01	01	23.8	1.00	278.5	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	02	11.2	1.00	278.0	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	03	203.2	1.00	277.0	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	04	63.5	1.00	276.8	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	05	273.5	1.00	276.3	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	06	315.6	1.00	275.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	07	10.8	1.00	276.2	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	08	4.9	1.00	276.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	09	20.0	1.00	277.5	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	10	328.1	1.00	279.0	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	11	174.8	1.03	280.9	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	12	167.4	2.32	283.6	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	13	217.3	2.50	284.9	1	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	14	205.0	2.50	285.8	1	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	15	199.3	2.41	285.4	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	16	222.7	2.55	285.6	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	17	213.3	2.24	284.6	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	18	210.9	2.10	284.0	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	19	208.8	1.12	283.2	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	20	191.7	1.12	282.5	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	21	194.1	1.07	281.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	22	183.4	1.48	282.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	23	328.2	1.61	281.4	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
03	01	01	24	139.3	1.03	280.7	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00

*** NOTES: STABILITY CLASS 1=A, 2=B, 3=C, 4=D, 5=E AND 6=F.
FLOW VECTOR IS DIRECTION TOWARD WHICH WIND IS BLOWING.

CONC URBAN ELEV FLGPOL DFAULT

*** THE SUMMARY OF MAXIMUM ANNUAL (3 YRS) RESULTS ***

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

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	0.38345 AT (579192.75, 4194907.00, 122.80, 1.80)	DC	NA
	2ND HIGHEST VALUE IS	0.38218 AT (579212.75, 4194907.00, 123.64, 1.80)	DC	NA
	3RD HIGHEST VALUE IS	0.37893 AT (579132.75, 4194887.00, 113.28, 1.80)	DC	NA
	4TH HIGHEST VALUE IS	0.37879 AT (579112.75, 4194887.00, 112.85, 1.80)	DC	NA
	5TH HIGHEST VALUE IS	0.37681 AT (578992.75, 4194867.00, 112.73, 1.80)	DC	NA
	6TH HIGHEST VALUE IS	0.37644 AT (579232.75, 4194907.00, 123.52, 1.80)	DC	NA
	7TH HIGHEST VALUE IS	0.37640 AT (579172.75, 4194907.00, 122.23, 1.80)	DC	NA
	8TH HIGHEST VALUE IS	0.37473 AT (579092.75, 4194887.00, 111.13, 1.80)	DC	NA
	9TH HIGHEST VALUE IS	0.37411 AT (579012.75, 4194867.00, 110.56, 1.80)	DC	NA
	10TH HIGHEST VALUE IS	0.37395 AT (579072.75, 4194887.00, 110.15, 1.80)	DC	NA

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

CONC   URBAN ELEV FLGPOL DFAULT

*** Message Summary : ISCST3 Model Execution ***

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

A Total of   0 Fatal Error Message(s)
A Total of   1 Warning Message(s)
A Total of   80 Informational Message(s)

A Total of   80 Calm Hours Identified

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

   ********   WARNING MESSAGES   ********
RE W282   449 CHK_EL:RecElev < SrcBase; See non-DFAULT HE>ZI option in MCB#9

   ****
   *** ISCST3 Finishes Successfully ***
   ****

Table D1 - Stationary Source Screening

Stationary Source - Screening Evaluation

Screening Level Risk Values - 70-Year Residential Exposure Scenario

Source No.	Source	Facility ID	Distance Multiplier	Cancer Risk (per million)	Chronic HI	PM2.5 ($\mu g/m^3$)	Methodology
1	Shell Oil Company	G7765		19.9	0.028	n/a	BAAQMD Screening Level values
	distance from Site - 120ft		0.445	8.86	0.012	n/a	Gasoline dispensing facility distance multiplier
2	Svensson Automotive	15996		0.00	0.000	0.000	BAAQMD Screening Level values
3	Lafayette Auto Body, Inc.	11563		0.00	0.000	0.000	BAAQMD Screening Level values
4	Penguin Cleaners	4969		14.2	0.038	0.000	BAAQMD Screening Level values
	distance from Site - 500ft		a	7.50	0.020	0.000	BAAQMD BETA1.3 screening calculator
BAAQMD Significance Threshold				10.0	1.0	0.30	For each individual source
Exceeds Threhold?				No	No	No	

[a]Adjusted based on emission rate of 0.37 lb/day obtained from BAAQMD (2014).

Sources: BAAQMD Stationary Source Screening Analysis Tools, Gasoline Dispensing Facility Distance Multiplier Tool, and Risk and Hazards Beta Emissions Screening Calculator (

Table D2 - High Volume Roadway Screening

Highway and High Volume Roadway - Screening Evaluation

Screening Level Risk Values - 70-Year Residential Exposure Scenario

Source No.	Source	Roadway Orientation	Annual Average Daily Trips	Distance (ft)	Cancer Risk (per million)	Chronic HI	Acute HI	PM2.5 ($\mu g/m^3$)	Comments
5	State Route 24	East-West	182,000	200	**41.0**	0.039	0.025	**0.38**	Highway Screening Level Values
6	Pleasant Hill Road	North-South	32,100	Adjacent	3.6	0.020	0.020	0.14	County Surface Street Screening Table
7	Deer Hill Road	North-South	12,200	Adjacent	2.4	0.020	0.020	0.09	County Surface Street Screening Table
BAAQMD Significance Threshold					10.0	1.0	1.0	0.30	For each individual source
Exceeds Threshold?					**Yes**	**No**	**No**	**Yes**	SR-24 exceeds thresholds

Sources: BAAQMD County Surface Street Screening Tables - Contra Clara County (2011) and California Environmental Health Traffic Program's (CEHTP) Traffic Linkage Web Service.
State Route 24 - Link 1075 - 6ft.

Table D3
Quantification of Carcinogenic Risks and Noncarcinogenic Risks
Residential and Park Visitor Exposure Scenario

Source Number	Source	Mass GLC	Weight Fraction	Contaminant	Carcinogenic Risk				Noncarcinogenic Hazards/ Toxicological Endpoints*									
					URF	CPF	DOSE **	RISK	REL	RfD	RESP	CNS/PNS	CV/BL	IMMUN	KIDN	GI/LV	REPRO	EYES
		($\mu g/m^3$)			($\mu g/m^3$)$^{-1}$	(mg/kg/day)$^{-1}$	(mg/kg-day)		($\mu g/m^3$)	(mg/kg/day)								
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)
70-year Residential Exposure Scenario																		
5	State Route 24	1.38E+00	2.80E-03	Acetaldehyde	2.7E-06	9.5E-03	1.1E-06	1.1E-08	1.4E+02	4.0E-02	2.8E-05							
			1.30E-03	Acrolein					3.5E-01	1.0E-04	5.1E-03							
			2.83E-02	Benzene	2.9E-05	1.0E-01	1.1E-05	1.2E-06	6.0E+01	1.7E-02		6.5E-04	6.5E-04				6.5E-04	
			5.50E-03	1,3-Butadiene	1.7E-04	6.0E-01	2.2E-06	1.3E-06	2.0E+01	5.7E-03							3.8E-04	
			1.17E-02	Ethylbenzene	2.5E-06	8.8E-03	4.7E-06	4.1E-08	2.0E+03	5.7E-01				8.1E-06	8.1E-06	8.1E-06	8.1E-06	
			1.58E-02	Formaldehyde	6.0E-06	2.1E-02	6.3E-06	1.3E-07	9.0E+00	2.6E-03	2.4E-03							2.4E-03
			3.14E-02	Hexane					7.0E+03	2.0E+00		6.2E-06						
			1.20E-03	Methanol					4.0E+03	1.1E+00							4.2E-07	
			2.00E-04	Methyl Ethyl Ketone					5.0E+03	1.4E+00	5.5E-08							5.5E-08
			5.00E-04	Naphthalene	3.4E-05	1.2E-01	2.0E-07	2.4E-08	9.0E+00	2.6E-03	7.7E-05							
			3.06E-02	Propylene					3.0E+03	8.6E-01	1.4E-05							
			1.20E-03	Styrene					9.0E+02	2.6E-01		1.8E-06						
			7.46E-02	Toluene					3.0E+02	8.6E-02	3.4E-04	3.4E-04					3.4E-04	
			5.38E-02	Xylenes					7.0E+02	2.0E-01	1.1E-04	1.1E-04						1.1E-04
		7.88E-02	1.00E+00	Diesel Particulate	3.0E-04	1.1E+00	2.3E-05	2.4E-05	5.0E+00	1.4E-03	1.6E-02							
				SOURCE TOTAL				**2.7E-05**			**2.4E-02**	1.1E-03	6.5E-04	8.1E-06	8.1E-06	8.1E-06	1.4E-03	2.5E-03
Park Visitors Exposure Scenario																		
5	State Route 24	1.38E+00	2.80E-03	Acetaldehyde	2.7E-06	9.5E-03	2.7E-08	2.5E-10	1.4E+02	4.0E-02	2.8E-05							
			1.30E-03	Acrolein					3.5E-01	1.0E-04	5.1E-03							
			2.83E-02	Benzene	2.9E-05	1.0E-01	2.7E-07	2.7E-08	6.0E+01	1.7E-02		6.5E-04	6.5E-04				6.5E-04	
			5.50E-03	1,3-Butadiene	1.7E-04	6.0E-01	5.2E-08	3.1E-08	2.0E+01	5.7E-03							3.8E-04	
			1.17E-02	Ethylbenzene	2.5E-06	8.8E-03	1.1E-07	9.8E-10	2.0E+03	5.7E-01				8.1E-06	8.1E-06	8.1E-06	8.1E-06	
			1.58E-02	Formaldehyde	6.0E-06	2.1E-02	1.5E-07	3.2E-09	9.0E+00	2.6E-03	2.4E-03							2.4E-03
			3.14E-02	Hexane					7.0E+03	2.0E+00		6.2E-06						
			1.20E-03	Methanol					4.0E+03	1.1E+00							4.2E-07	
			2.00E-04	Methyl Ethyl Ketone					5.0E+03	1.4E+00	5.5E-08							5.5E-08
			5.00E-04	Naphthalene	3.4E-05	1.2E-01	4.8E-09	5.7E-10	9.0E+00	2.6E-03	7.7E-05							
			3.06E-02	Propylene					3.0E+03	8.6E-01	1.4E-05							
			1.20E-03	Styrene					9.0E+02	2.6E-01		1.8E-06						
			7.46E-02	Toluene					3.0E+02	8.6E-02	3.4E-04	3.4E-04					3.4E-04	
			5.38E-02	Xylenes					7.0E+02	2.0E-01	1.1E-04	1.1E-04						1.1E-04
		7.88E-02	1.00E+00	Diesel Particulate	3.0E-04	1.1E+00	5.4E-07	5.7E-07	5.0E+00	1.4E-03	1.6E-02							
				SOURCE TOTAL				**6.3E-07**			**2.4E-02**	1.1E-03	6.5E-04	8.1E-06	8.1E-06	8.1E-06	1.4E-03	2.5E-03

* Key to Toxicological Endpoints

RESP	Respiratory System
CNS/PNS	Central/Peripheral Nervous System
CV/BL	Cardiovascular/Blood System
IMMUN	Immune System
KIDN	Kidney
REPRO	Reproductive System
EYES	Eye irritation and/or other effects

** Exposure factors used to calculate dose

70-year Residential Exposure Scenario	
exposure frequency (days/year)	350
exposure duration (years)	70
inhalation rate (L/kg-day))	302
inhalation absorption factor	1
averaging time (days)	25550
fraction of time at home	1.0
2017 Maximum annual PM2.5 concentration (µg/	**0.38**

Park Visitors Exposure Scenario	
exposure frequency (days/year)	100
exposure duration (years)	70
inhalation rate (L/kg-day))	302
inhalation absorption factor	1
averaging time (days)	25550
fraction of time at the park (2 hrs/day)	0.083
2017 Maximum annual PM2.5 concen	**0.01**

Table D4
Quantification of Carcinogenic Risks and Noncarcinogenic Risks
Residential Exposure Scenario - Mitigated Scenario

Source Number	Source	Mass GLC	Weight Fraction	Contaminant	Carcinogenic Risk				Noncarcinogenic Hazards/ Toxicological Endpoints*									
					URF	CPF	DOSE **	RISK	REL	RfD	RESP	CNS/PNS	CV/BL	IMMUN	KIDN	GI/LV	REPRO	EYES
		($\mu g/m^3$)			($\mu g/m^3$)$^{-1}$	(mg/kg/day)$^{-1}$	(mg/kg-day)		($\mu g/m^3$)	(mg/kg/day)								
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)
70-year Residential Exposure Scenario																		
5	State Route 24	5.88E-01	2.80E-03	Acetaldehyde	2.7E-06	9.5E-03	3.5E-07	3.3E-09	1.4E+02	4.0E-02	1.2E-05							
			1.30E-03	Acrolein					3.5E-01	1.0E-04	2.2E-03							
			2.83E-02	Benzene	2.9E-05	1.0E-01	3.5E-06	3.6E-07	6.0E+01	1.7E-02		2.8E-04	2.8E-04				2.8E-04	
			5.50E-03	1,3-Butadiene	1.7E-04	6.0E-01	6.9E-07	4.1E-07	2.0E+01	5.7E-03							1.6E-04	
			1.17E-02	Ethylbenzene	2.5E-06	8.8E-03	1.5E-06	1.3E-08	2.0E+03	5.7E-01				3.4E-06	3.4E-06	3.4E-06	3.4E-06	
			1.58E-02	Formaldehyde	6.0E-06	2.1E-02	2.0E-06	4.1E-08	9.0E+00	2.6E-03	1.0E-03							1.0E-03
			3.14E-02	Hexane					7.0E+03	2.0E+00		2.6E-06						
			1.20E-03	Methanol					4.0E+03	1.1E+00							1.8E-07	
			2.00E-04	Methyl Ethyl Ketone					5.0E+03	1.4E+00	2.4E-08							2.4E-08
			5.00E-04	Naphthalene	3.4E-05	1.2E-01	6.2E-08	7.4E-09	9.0E+00	2.6E-03	3.3E-05							
			3.06E-02	Propylene					3.0E+03	8.6E-01	6.0E-06							
			1.20E-03	Styrene					9.0E+02	2.6E-01		7.8E-07						
			7.46E-02	Toluene					3.0E+02	8.6E-02	1.5E-04	1.5E-04					1.5E-04	
			5.38E-02	Xylenes					7.0E+02	2.0E-01	4.5E-05	4.5E-05						4.5E-05
		3.35E-02	1.00E+00	Diesel Particulate	3.0E-04	1.1E+00	7.1E-06	7.4E-06	5.0E+00	1.4E-03	6.7E-03							
				SOURCE TOTAL				**8.3E-06**			**1.0E-02**	4.7E-04	2.8E-04	3.4E-06	3.4E-06	3.4E-06	5.9E-04	1.1E-03

* Key to Toxicological Endpoints

RESP	Respiratory System
CNS/PNS	Central/Peripheral Nervous System
CV/BL	Cardiovascular/Blood System
IMMUN	Immune System
KIDN	Kidney
REPRO	Reproductive System
EYES	Eye irritation and/or other effects

** Exposure factors used to calculate dose

70-year Residential Exposure Scenario	
exposure frequency (days/year)	350
exposure duration (years)	70
inhalation rate (L/kg-day))	302
inhalation absorption factor	1
averaging time (days)	25550
fraction of time at home	0.73
2017 Maximum annual PM2.5 concentration (µg/ı	**0.16**
MERF 10 filter reduction	0.58

TABLE D5
SUMMARY OF HEALTH RISK
Residential Exposure Scenario

Unmitigated Scenarios			**Significance Threshold**	**Exceeds Threshold?**
Assumes 24 hour outdoor exposure				
70 Year Exposure Scenario	Cancer Risk	**2.7E-05**	1.0E-05	**Yes**
	$PM_{2.5}$	**0.38**	0.30	**Yes**

Mitigated Scenarios - MERV 10 Filters			**Significance Threshold**	**Exceeds Threshold?**
Assumes 57.5% reduction in DPM				
70 Year Exposure Scenario	Cancer Risk	8.3E-06	From Table D4, 70-yr exposure with mitigation	
Assumes 1 hour/day	1 hours outside	8.1E-07	= Unmitigated Risk x (1 hr outside/24 hr-day) x FAH	
outdoor exposure	23 hours inside *	7.9E-06	= Mitigated Risk x (23 hr inside/24 hr-day)	
	Total Cancer Risk	**8.7E-06**	1.0E-05	**No**
	$PM_{2.5}$	0.16	From Table D4, 70-yr exposure with mitigation	
Assumes 1 hour/day	1 hours outside	0.01	= Unmitigated $PM_{2.5}$ x (1 hr outside/24 hr-day) x FAH	
outdoor exposure	23 hours inside *	0.16	= Mitigated $PM_{2.5}$ x (23 hr inside/24 hr-day)	
	Total Cancer Risk	**0.17**	0.30	**No**

* Fraction of time at home (FAH) already taken into account in mitigated/indoor cancer risk calculations (see Tables D4).

Table D6 - Cumulative Hazards and Risks Evaluation
Quantification of Carcinogenic Risks and Noncarcinogenic Risks

Cumulative Impact Evaluation

70-Year Residential Exposure Scenario - Health Risk Values

Source No.	Source	Cancer Risk (per	Chronic HI	Acute HI	PM2.5 ($\mu g/m^3$)	Methodology
1	Shell Oil Company	8.86	0.01	0.00	n/a	Gasoline dispensing facility distance multiplier
2	Svensson Automotive	0.00	0.00	0.00	0.00	BAAQMD screening levels
3	Lafayette Auto Body, Inc.	0.00	0.00	0.00	0.00	BAAQMD screening levels
4	Penguin Cleaners	7.50	0.02	0.02	0.00	BAAQMD BETA1.3 screening calculator
5	State Route 24	8.74	0.01	0.00	0.16	Dispersion modeling output with MERV filter mitigation
6	Pleasant Hill Road	3.59	0.02	0.02	0.14	County Surface Street Screening Table
7	Deer Hill Road	2.37	0.02	0.02	0.09	County Surface Street Screening Table
	Cumulative Total	31.1	0.08	0.06	0.39	
	BAAQMD Significance Threshold	100	10.0	10.0	0.80	
	Exceeds Threhold?	**No**	**No**	**No**	**No**	

TABLE 2: MINIMUM EFFICIENCY REPORTING VALUE (MERV) PARAMETERS

ASHRAE Standard 52.2				ASHRAE Standard 52.1	Application Guidelines		
MERV	Particle Size Removal Efficiency, Percent in Particle Size Range, µm			Dust-Spot Efficiency Percent	Particle Size and Typical Controlled Contaminant	Typical Applications	Typical Air Filter/Cleaner Type
	0.3 to 1	1 to 3	3 to 10				
20	≥ 99.999	in 0.1 – 0.2 µm particle size		—	**< 0.3 µm** Virus (unattached) Carbon dust Sea salt All combustion smoke	Electronics manufacturing Pharmaceutical manufacturing Carcinogenic materials	HEPA/ULPA Filters*
19	≥ 99.999	in 0.3 µm particle size		—			
18	≥ 99.99			—			
17	≥ 99.97			—			
16	> 95	> 95	> 95	—	**0.3-1 µm** All bacteria Droplet nuclei (sneeze) Cooking oil Most smoke Insecticide dust Most face powder Most paint pigments	Superior commercial buildings Hospital inpatient care General surgery	**Bag Filters** – Nonsupported (flexible) microfine fiberglass or synthetic media, 12 to 36 inches deep. **Box Filters** – Rigid style cartridge, 6 to 12 inches deep.
15	85-95	> 90	> 90	> 95			
14	75-85	> 90	> 90	90-95			
13	< 75	> 90	> 90	80-90			
12	—	> 80	> 90	70-75	**1-3 µm** Legionella Humidifier dust Lead dust Milled flour Auto emission particles Nebulizer drops	Superior residential Better commercial buildings Hospital laboratories	**Pleated filters** –Extended surface with cotton or polyester media or both, 1 to 6 inches thick. **Box Filters** – Rigid style cartridge, 6 to 12 inches deep.
11	—	65-80	> 85	60-65			
10	—	50-65	> 85	50-55			
9	—	< 50	> 85	40-45			
8	—	—	> 70	30-35	**3-10 µm** Mold Spores Dust mite body parts and droppings Cat and dog dander Hair spray Fabric protector Dusting aids Pudding mix Powdered milk	Better residential Commercial buildings Industrial workplaces	**Pleated filters** –Extended surface with cotton or polyester media or both, 1 to 6 inches thick. **Cartridge filters** –Viscous cube or pocket filters **Throwaway** –Synthetic media panel filters
7	—	—	50-70	25-30			
6**	—	—	35-50	< 20			
5	—	—	20-35	< 20			
4	—	—	< 20	< 20	**> 10 µm** Pollen Dust mites Cockroach body parts and droppings Spanish moss Sanding dust Spray paint dust Textile fibers Carpet fibers	Minimum filtration Residential window air conditioners	**Throwaway** – Fiberglass or synthetic media panel, 1 inch thick. **Washable** – Aluminum mesh, foam rubber panel **Electrostatic** – Self-charging (passive) woven polycarbonate panel
3	—	—	< 20	< 20			
2	—	—	< 20	< 20			
1	—	—	< 20	< 20			

This table is adapted from ANSI/ASHRAE Standard 52.2-2007. [15]

**The last four MERV values of 17 to 20 are not part of the official standard test, but have been added by ASHRAE for comparison purposes. Ultra Low Penetration Air filters (ULPA) have a minimum efficiency of 99.999 percent in removing 0.3 µm particles, based on the IEST test method. MERVs between 17 and 19 are rated for 0.3µm particles, whereas a MERV of 20 is rated for 0.1 to 0.2 µm particles.*

*** For residential applications, the ANSI/ASHRAE Standard 62.2-2007[16] requires a filter with a designated minimum efficiency of MERV 6 or better.*