Appendix C

Health Risk Assessment

Construction Health Risk Assessment

Sand Canyon Resort

June 2019

Toxic Air Contaminants (TACs) Background

TACs refer to a diverse group of air pollutants that include both organic and inorganic chemical substances that may be emitted from a variety of common sources including gasoline stations, motor vehicles, dry cleaners, industrial operations, painting operations, and research and teaching facilities. TACs are typically found in low concentrations in ambient air, especially in urban areas. TACs are different than "criteria" pollutants in that ambient air quality standards have not been established for them, largely because there are hundreds of air toxics and their effects on health tend to be felt on a local scale rather than on a regional basis. TACs are regulated at the regional, state, and federal level, however, because chronic exposure can result in adverse health effects. TACs are known to cause or contribute to cancer or non-cancer health effects such as birth defects, genetic damage, and other adverse health effects. Effects from TACs may be both chronic (i.e., of long duration) and acute (i.e., severe but of short duration) on human health. Acute health effects are attributable to sudden exposure to high quantities of air toxics. These effects include nausea, skin irritation, respiratory illness, and, in some cases, death. Chronic health effects result from low-dose, long-term exposure from routine releases of air toxics. Diesel exhaust, or Diesel Particulate matter (DPM), is the predominant TAC in urban air and is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, including benzene, formaldehyde, acrolein, butadiene, and acetaldehyde have been previously identified as TACs by the CARB, and are listed as carcinogens either under the state's Proposition 65 or under the federal Hazardous Air Pollutants programs.

Methodology

The greatest potential for TAC emissions during Project construction would be related to diesel particulate matter emissions associated with heavy-duty equipment. Construction activities associated with the Project would be short term in nature (i.e., 18 months). Although construction would be temporary, construction impacts associated with TACs were addressed quantitatively in a Construction HRA. In March 2015, the Office of Environmental Health Hazard Assessment (OEHHA) adopted revised guidelines that update previous guidance by incorporating advances in risk assessment with consideration of infants and children using Age Sensitivity Factors (ASF). The construction HRA was performed in accordance with the revised OEHHA Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (OEHHA 2015). The analysis utilizes dispersion modeling using the United States Environmental Protection Agency (USEPA) AERMOD[1] model with meteorological data from the closest South Coast Air Quality Management District (SCAQMD) monitoring station located at the Santa Clarita station. See attachments herein for additional information related to the assumptions of the construction HRA.

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

Based on the Project's construction assumptions and California Emissions Estimator Model (CalEEMod) results with implementation of Tier 4 construction equipment (or equivalent - see attached CalEEMod data for this HRA), the worst-case daily DPM emissions were utilized to assess potential health risks to off-site sensitive receptors. The Air Quality sensitive receptors were included in the assessment. Note, this assessment focuses on the project construction and the maximum impact to the nearest sensitive receptors.

The American Meteorological Society (AMS)/USEPA Regulatory Model (AERMOD) was utilized to quantify the concentrations of DPM at each of the sensitive receptors, and worst-case receptor location was analyzed. AERMOD is steady-state plume modeling system specially designed to support the USEPA's regulatory modeling programs. AERMOD allows the user to conduct site-specific modeling with the use of various inputs including source types, receptor locations, terrain data, meteorological conditions, and much more. Discrete receptors were placed at the sensitive receptor locations to represent ground-level receptors (worst-case). The terrain data for the Project area was applied from the USGS online database.

Based on OEHHA (2015) methodology for residential receptors, the cancer risk for a particular chemical of interest is based on the following:

$$RISK_{inh\text{-}res} = DOSE_{air} \times CPF \times ASF \times ED/AT \times FAH$$

Where:

$RISK_{inh\text{-}res}$ = Residential inhalation cancer risk

$DOSE_{air}$ = Daily inhalation dose (mg/kg-day)

CPF = Inhalation cancer potency factor ($mg/kg\text{-}day^{-1}$)

ASF = Age sensitivity factor for a specified age group

ED = Exposure duration (in years) for a specified age group

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home

The attached carcinogenic calculation sheets illustrate the assumptions and calculations utilized in this HRA.

Noncancer chronic inhalation impacts are calculated by dividing the annual average concentration by the Reference Exposure Level (REL or REF) for that substance. The REL is defined as the concentration at which no adverse noncancer health effects are anticipated.

For a single substance, this result is called the Hazard Quotient (HQ). The following equation is used to calculate the HQ:

$$HQ = C_i/REL_i$$

Where:

C_i = Concentration in the air of substance i

REL_i = Chronic noncancer Reference Exposure Level for substance i

For multiple substances, the Hazard Index (HI) is calculated. The HI is calculated by summing the HQs from all substances that affect the same organ system.

Carcinogenic and Chronic Noncarcinogenic Risk Results

The construction activities associated with the project would result in the generation of TACs, including diesel particulate matter. Potential health risks associated with construction of the Project were performed based on the OEHHA guidance and incorporation of the results from the AERMOD dispersion model, under several different scenarios. This HRA modeled three scenarios: unmitigated, mitigation with Tier 3 Construction Equipment, and Tier 4 Construction Equipment. The unmitigated and Tier 2 Construction Equipment Scenarios resulted in potentially significant carcinogenic risk under a conservative analysis (i.e., HRA assumes receptors would be outdoors during the entire exposure duration – which is conservative because many residents would not be home during a workday, and if they are home, this HRA conservatively assumes they would be outdoors for the entirety of the 8-hour construction day for 18 consecutive months). This HRA also assumes the worst-case receptor would be adjacent to the Project Site from 3rd trimester to 18 months old. Nevertheless, the following summarizes the health risks with no mitigation and with Tier 3 equipment:

Scenario	**Carcinogenic Risks***	**Non-Carcinogenic Risks**
1. Unmitigated	33.1 per one million	0.07
2. Mitigated (Tier 3 Equipment)	24.01 per one million	0.07

**Note: Maximum Individual Cancer Risk Threshold is 10 per one million. Non-Carcinogenic Risks carry a Hazard Index (i.e., "threshold"), is 1.0.*

As the above results exceeded the 10 per one million threshold with no mitigation and Tier 3 mitigation, the project was modeled with Tier 4 construction equipment. Table 1, Summary of Carcinogenic Risks, summarizes the carcinogenic risk for the maximum impacted sensitive receptor with the use of Tier 4 construction equipment under a highly conservative scenario. The exposure under the OEHHA Guidance takes into account early life (infant and children) exposure. Again, it should be noted that the calculated cancer risk is conservative as it is estimated for outdoor exposure over the entire construction period (i.e., 18 months), which assumes that sensitive receptors (residential uses) would not have any mitigation such as mechanical filtration and that residential uses would have continuously open windows and the receptor would be home and outside for all hours. This HRA also assumes that all construction equipment would operate at full-time use (i.e., load factor). The max day for $PM_{2.5}$ (diesel exhaust) emissions was assumed to occur each day for all 18 months of construction days; this is conservative to assume the peak day would occur all day and every day during construction. The most harmful DPM is classified as ultrafine particulates as a subset of $PM_{2.5}$ (the most harmful DPM is classified as 0.1 microns in diameter). This report assumes all $PM_{2.5}$ exhaust would be considered the most harmful class of ultrafine diesel particulate, thereby resulting in likely overstated effects of DPM exhaust. The maximum impact at the nearest sensitive receptor (i.e., residences northeast of the Project Site) would be less than the risk threshold of 10.0 in 1 million with the implementation of Tier 4 equipment during construction. Impacts at locations farther than this receptor would be further reduced, and thus impacts would be less than significant.

Potential noncarcinogenic effects of chronic (i.e., long term – DPM does not have an acute REL) DPM exposures were evaluated using the Hazard Index approach as described in the OEHHA Guidance. A hazard index equal to or greater than 1.0 represents a significant chronic health hazard. As shown in greater detail the following attachments, non-carcinogenic effects at the nearest sensitive receptor (i.e., residences located north of the Project Site) would be 0.007, which is less than the 1.0 health hazard threshold. Impacts at locations farther than this receptor would be further reduced, and thus non-cancer effects would be less than significant.

Table 1
Summary of Carcinogenic Risks

Risk Scenario	Carcinogenic Risk Per One Million	Maximum Individual Cancer Risk Threshold	Exceeds Threshold?
Residential Receptor	2.21	10.0	No

REFERENCES

AMS/USEPA Regulatory Model (AERMOD)

California Air Pollution Control Officers Association (CAPCOA)

Health Risk Assessments for Proposed Land Use Project, Guidance Document, July 2009

California Air Resources Board (CARB)

Air Quality and Land Use Handbook, April 2005

California Office of Environmental Health Hazard Assessment (OEHHA)

Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk, 2015

Hot Spots Unit Risk and Cancer Potency Values
(http://www.oehha.ca.gov/air/hot_spots/2009/AppendixA.pdf)

Chronic REL Summary (http://www.oehha.ca.gov/air/allrels.html)

DUDEK; Adam Poll, QEP, LEED AP DB+C (provided Peer Review and guidance)

Google Earth, 2019

South Coast Air Quality Management District (SCAQMD)

Air Quality Significance Thresholds

California Emissions Estimator Model (CalEEMod) and User Guide

CEQA Air Quality Handbook, 1993

Meteorological Data for AERMOD

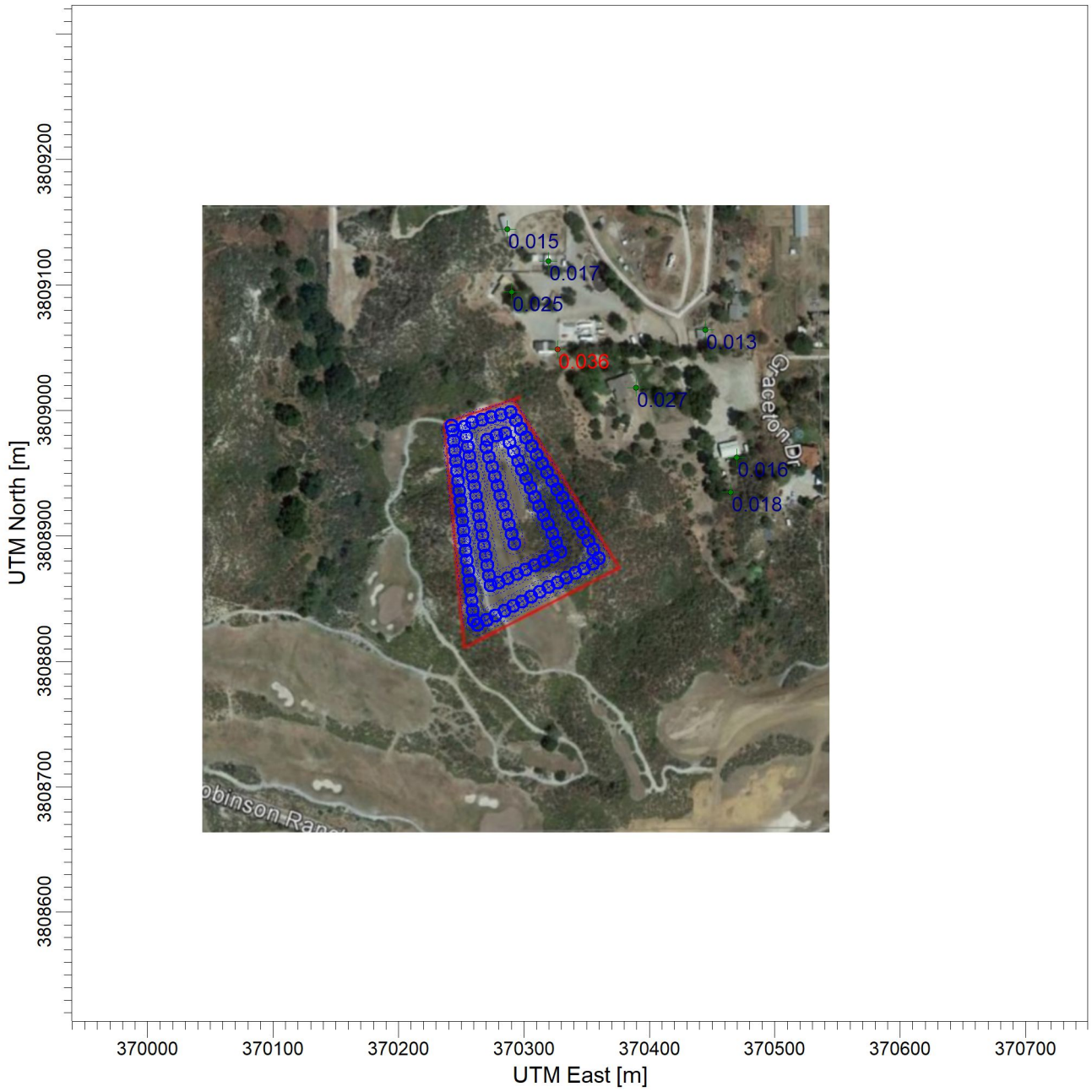
Modeling Guidance for AERMOD

District Staff

ATTACHMENTS

1. 4.0-Acre Grading Area & Receptors
2. Cancer and Health Calculations
3. CalEEMod - Tier 4 Equipment Emissions
4. AERMOD Output File

PROJECT
Sand Canyon Resort - Worst Case 4.0 Grading area



COMMENTS:	SOURCES: **1**		
	RECEPTORS: **8**		POMEROY ENVIRONMENTAL SERVICES
	OUTPUT TYPE: **Concentration**	SCALE: 1:5,094 0 0.1 km	
	MAX: **3.6E-02 ug/m^3**		PROJECT NO.:

AERMOD View - Lakes Environmental Software

Carcinogenic Risk Summary (Risks Per Million)

Residential	2.21E+00

Notes:

Residency Risk = 3rd Trimester to Birth Risk + 0<2 Risk (note: construction schedule 18 mos; 3 mos grading & 15 mos bldg.)

See following pages for calculation details for each risk scenario

Carcinogenic Risks - 3rd Trimester to Birth

Source	Concentration		Weight Fraction	Contaminant	Carcinogenic Risk		
	(ug/m3)	(mg/m3)			URF[a] (ug/m3)	CPF[a] (mg/kg/day)	RISK (per million)
Construction	3.60E-02	3.60E-05	1.00E+00	DPM	3.00E-04	1.10E+00	1.98E-01
						Totals	1.98E-01

[a] http://www.oehha.ca.gov/air/hot_spots/2009/AppendixA.pdf (updated 2011)

Assumptions (per OEHHA Guidance Manual for Preparation of HRAs, Appendix I, February 2015)

Daily Breathing Rate	240 L/kg-day (95th percentile); per ARB Risk Management Guidance 2015
Inhalation Absorbtion	1
Exposure Frequency	250 days - Equivalent to working 5 days/week, 50 weeks/year.
Age Sensitivity Factor	10
Fraction At Home	0.85
Exposure Duration	0.25 years (3 months for grading)
Averaging Time	70 years (25,550 days)

Carcinogenic Risks - 0<2

Source	Concentration		Weight Fraction	Contaminant	Carcinogenic Risk		
	(ug/m3)	(mg/m3)			URF[a] (ug/m3)	CPF[a] (mg/kg/day)	RISK (per million)
Freeway	3.60E-02	3.60E-05	1.00E+00	DPM	3.00E-04	1.10E+00	2.02E+00
						Totals	2.02E+00

[a] http://www.oehha.ca.gov/air/hot_spots/2009/AppendixA.pdf (updated 2011)

Assumptions (per OEHHA Guidance Manual for Preparation of HRAs, Appendix I, February 2015)

Daily Breathing Rate	490 L/kg-day (Averagre rate for an 8-hour exp. for light intensity activities)	
Inhalation Absorbtion	1	
Exposure Frequency	250 days - Equivalent to working 5 days/week, 50 weeks/year.	
Age Sensitivity Factor	10	
Fraction At Home	0.85	
Exposure Duration	1.25 years (Construction phase 15 months)	
Averaging Time	70 years (25,550 days)	0.13

Chronic Noncarcinogenic Hazards

Source	Concentration		Weight Fraction	Contaminant	Chronic Noncarcinogenic Hazards/Toxicological Endpoints								
	(ug/m3)	(mg/m3)			REL[a] (ug/m3)	RESP	CNS/PNS	CV/BL	IMMUN	KIDN	GI/LV	REPRO	EYES
Construction	3.60E-02	3.60E-05	1.00E+00	DPM	5.00E+00	7.20E-03							
					Totals	7.20E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

[a] http://www.oehha.ca.gov/air/allrels.html

Toxicological Endpoints

RESP	Respiratory System
CNS/PNS	Central/Peripheral Nervous System
CV/BL	Cardiovascular/Blood System
IMMUN	Immune System
KIDN	Kidney
GI/LV	Gastrointestinal System/Liver
REPRO	Reproductive System
EYES	Eye irritation

Emission Rate Summary

Maximum Daily DPM (see max PM2.5 Exhaust from attached CalEEMod Sheets)

Year	2019	2020	Avg.
Total (pounds/day)	0.13	0.15	0.14

Maximum Hour DPM (pounds/hour)

Average	Avg
Total (pounds/hour)	0.0058

Maximum Hour DPM (grams per hour)

Average	Avg
Total (grams/hour)	2.63

Maximum DPM Emission Rate

Average	Max
Total (grams/sec)	0.00071

Sand Canyon Resort - Tier 4

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Hotel	392.00	Room	71.00	411,300.00	0
Parking Lot	375.00	Space	4.00	150,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Sand Canyon Resort - Tier 4 - Los Angeles-South Coast County, Winter

Project Characteristics -

Land Use - Site is 75 acres.

Construction Phase - Consistent with SCAQMD Rule 1113, assumes VOC content of 50 grams per liter for architectural coatings.

Off-road Equipment -

Grading - Site is 75 acres.

Architectural Coating - Consistent with SCAQMD Rule 1113, assumes VOC content of 50 grams per liter for architectural coatings.

Vehicle Trips - Trip rate per traffic analysis.

Area Coating - Consistent with SCAQMD Rule 1113, assumes VOC content of 50 grams per liter for architectural coatings.

Construction Off-road Equipment Mitigation - Assumed all Tier 4 equipment.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	50.00
tblArchitecturalCoating	EF_Parking	100.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	100	50
tblAreaCoating	Area_EF_Nonresidential_Interior	100	50
tblAreaCoating	Area_EF_Parking	100	50
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	75.00	44.00
tblConstructionPhase	NumDays	1,110.00	264.00
tblConstructionPhase	NumDays	110.00	132.00
tblConstructionPhase	NumDays	75.00	22.00
tblConstructionPhase	PhaseEndDate	2/26/2025	12/31/2020
tblConstructionPhase	PhaseEndDate	7/31/2024	12/31/2020
tblConstructionPhase	PhaseEndDate	4/29/2020	12/27/2019
tblConstructionPhase	PhaseEndDate	11/13/2024	12/30/2020
tblConstructionPhase	PhaseStartDate	11/14/2024	11/1/2020
tblConstructionPhase	PhaseStartDate	4/30/2020	12/28/2019
tblConstructionPhase	PhaseStartDate	11/28/2019	6/27/2019

tblConstructionPhase	PhaseStartDate	8/1/2024	12/1/2020
tblGrading	AcresOfGrading	330.00	75.00
tblLandUse	LandUseSquareFeet	569,184.00	411,300.00
tblLandUse	LotAcreage	13.07	71.00
tblLandUse	LotAcreage	3.37	4.00
tblVehicleTrips	WD_TR	8.17	8.36

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

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	lb/day										lb/day					
2019	4.8497	54.6015	34.2617	0.0774	6.8482	2.3846	9.2328	3.4346	2.1938	5.6284	0.0000	7,782.7583	7,782.7583	1.9505	0.0000	7,805.2429
2020	49.8606	45.7999	48.1101	0.1090	3.9199	2.0554	5.9753	1.0530	1.9243	2.9772	0.0000	10,821.2887	10,821.2887	1.6285	0.0000	10,862.0000
Maximum	**49.8606**	**54.6015**	**48.1101**	**0.1090**	**6.8482**	**2.3846**	**9.2328**	**3.4346**	**2.1938**	**5.6284**	**0.0000**	**10,821.2887**	**10,821.2887**	**1.9505**	**0.0000**	**10,862.0000**

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	lb/day										lb/day					
2019	2.0334	13.8557	33.8841	0.0774	3.2269	0.1325	3.3594	1.3757	0.1278	1.4790	0.0000	7,782.7583	7,782.7583	1.9505	0.0000	7,805.2429
2020	46.7800	14.4433	51.3664	0.1090	3.9199	0.1568	4.0767	1.0530	0.1526	1.2055	0.0000	10,821.2887	10,821.2887	1.6285	0.0000	10,862.0000
Maximum	**46.7800**	**14.4433**	**51.3664**	**0.1090**	**3.9199**	**0.1568**	**4.0767**	**1.3757**	**0.1526**	**1.4790**	**0.0000**	**10,821.2887**	**10,821.2887**	**1.9505**	**0.0000**	**10,862.0000**

	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	**10.78**	**71.81**	**-3.49**	**0.00**	**33.63**	**93.48**	**51.10**	**45.88**	**93.19**	**68.81**	**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	lb/day										lb/day					
Area	8.7322	7.2000e-004	0.0786	1.0000e-005		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004		0.1679	0.1679	4.5000e-004		0.1790
Energy	0.2914	2.6492	2.2253	0.0159		0.2013	0.2013		0.2013	0.2013		3,179.0408	3,179.0408	0.0609	0.0583	3,197.9322
Mobile	5.3243	24.9456	62.2831	0.2042	16.6281	0.1804	16.8085	4.4501	0.1684	4.6185		20,777.4094	20,777.4094	1.1810		20,806.9347
Total	**14.3479**	**27.5955**	**64.5870**	**0.2201**	**16.6281**	**0.3820**	**17.0101**	**4.4501**	**0.3700**	**4.8201**		**23,956.6180**	**23,956.6180**	**1.2424**	**0.0583**	**24,005.0459**

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	lb/day										lb/day					
Area	8.7322	7.2000e-004	0.0786	1.0000e-005		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004		0.1679	0.1679	4.5000e-004		0.1790
Energy	0.2914	2.6492	2.2253	0.0159		0.2013	0.2013		0.2013	0.2013		3,179.0408	3,179.0408	0.0609	0.0583	3,197.9322
Mobile	5.3243	24.9456	62.2831	0.2042	16.6281	0.1804	16.8085	4.4501	0.1684	4.6185		20,777.4094	20,777.4094	1.1810		20,806.9347
Total	**14.3479**	**27.5955**	**64.5870**	**0.2201**	**16.6281**	**0.3820**	**17.0101**	**4.4501**	**0.3700**	**4.8201**		**23,956.6180**	**23,956.6180**	**1.2424**	**0.0583**	**24,005.0459**

	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	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	6/27/2019	12/27/2019	5	132	
2	Building Construction	Building Construction	12/28/2019	12/31/2020	5	264	
3	Paving	Paving	12/1/2020	12/30/2020	5	22	
4	Architectural Coating	Architectural Coating	11/1/2020	12/31/2020	5	44	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 4

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 616,950; Non-Residential Outdoor: 205,650; Striped Parking Area: 9,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

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
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	236.00	92.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	47.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Grading - 2019

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	lb/day										lb/day					
Fugitive Dust					6.6246	0.0000	6.6246	3.3753	0.0000	3.3753			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920		6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**6.6246**	**2.3827**	**9.0073**	**3.3753**	**2.1920**	**5.5673**		**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

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	lb/day										lb/day					
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
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
Worker	0.1108	0.0813	0.8850	2.2900e-003	0.2236	1.9300e-003	0.2255	0.0593	1.7800e-003	0.0611		228.4262	228.4262	7.8600e-003		228.6226
Total	**0.1108**	**0.0813**	**0.8850**	**2.2900e-003**	**0.2236**	**1.9300e-003**	**0.2255**	**0.0593**	**1.7800e-003**	**0.0611**		**228.4262**	**228.4262**	**7.8600e-003**		**228.6226**

3.2 Grading - 2019

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	lb/day										lb/day					
Fugitive Dust					2.5836	0.0000	2.5836	1.3164	0.0000	1.3164			0.0000			0.0000
Off-Road	0.7616	3.3000	32.9991	0.0620		0.1015	0.1015		0.1015	0.1015	0.0000	6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**0.7616**	**3.3000**	**32.9991**	**0.0620**	**2.5836**	**0.1015**	**2.6852**	**1.3164**	**0.1015**	**1.4179**	**0.0000**	**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

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	lb/day										lb/day					
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
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
Worker	0.1108	0.0813	0.8850	2.2900e-003	0.2236	1.9300e-003	0.2255	0.0593	1.7800e-003	0.0611		228.4262	228.4262	7.8600e-003		228.6226
Total	**0.1108**	**0.0813**	**0.8850**	**2.2900e-003**	**0.2236**	**1.9300e-003**	**0.2255**	**0.0593**	**1.7800e-003**	**0.0611**		**228.4262**	**228.4262**	**7.8600e-003**		**228.6226**

3.3 Building Construction - 2019

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	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127		2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**		**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

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	lb/day										lb/day					
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
Vendor	0.3987	10.6614	3.1140	0.0234	0.5890	0.0690	0.6580	0.1696	0.0660	0.2356		2,495.7494	2,495.7494	0.1753		2,500.1325
Worker	1.3069	0.9596	10.4424	0.0271	2.6379	0.0228	2.6607	0.6996	0.0210	0.7206		2,695.4287	2,695.4287	0.0927		2,697.7469
Total	**1.7056**	**11.6210**	**13.5564**	**0.0505**	**3.2269**	**0.0917**	**3.3186**	**0.8692**	**0.0870**	**0.9561**		**5,191.1781**	**5,191.1781**	**0.2681**		**5,197.8794**

3.3 Building Construction - 2019

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	lb/day										lb/day					
Off-Road	0.3278	2.2347	17.4603	0.0269		0.0408	0.0408		0.0408	0.0408	0.0000	2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**0.3278**	**2.2347**	**17.4603**	**0.0269**		**0.0408**	**0.0408**		**0.0408**	**0.0408**	**0.0000**	**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

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	lb/day										lb/day					
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
Vendor	0.3987	10.6614	3.1140	0.0234	0.5890	0.0690	0.6580	0.1696	0.0660	0.2356		2,495.7494	2,495.7494	0.1753		2,500.1325
Worker	1.3069	0.9596	10.4424	0.0271	2.6379	0.0228	2.6607	0.6996	0.0210	0.7206		2,695.4287	2,695.4287	0.0927		2,697.7469
Total	**1.7056**	**11.6210**	**13.5564**	**0.0505**	**3.2269**	**0.0917**	**3.3186**	**0.8692**	**0.0870**	**0.9561**		**5,191.1781**	**5,191.1781**	**0.2681**		**5,197.8794**

3.3 Building Construction - 2020

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	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

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	lb/day										lb/day					
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
Vendor	0.3421	9.7843	2.8279	0.0232	0.5890	0.0468	0.6358	0.1696	0.0448	0.2143		2,478.9314	2,478.9314	0.1658		2,483.0755
Worker	1.2060	0.8554	9.4639	0.0262	2.6379	0.0221	2.6600	0.6996	0.0203	0.7199		2,613.5121	2,613.5121	0.0824		2,615.5715
Total	**1.5481**	**10.6397**	**12.2918**	**0.0495**	**3.2269**	**0.0688**	**3.2958**	**0.8692**	**0.0651**	**0.9343**		**5,092.4435**	**5,092.4435**	**0.2481**		**5,098.6470**

3.3 Building Construction - 2020

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	lb/day										lb/day					
Off-Road	0.3278	2.2347	17.4603	0.0269		0.0408	0.0408		0.0408	0.0408	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**0.3278**	**2.2347**	**17.4603**	**0.0269**		**0.0408**	**0.0408**		**0.0408**	**0.0408**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

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	lb/day										lb/day					
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
Vendor	0.3421	9.7843	2.8279	0.0232	0.5890	0.0468	0.6358	0.1696	0.0448	0.2143		2,478.9314	2,478.9314	0.1658		2,483.0755
Worker	1.2060	0.8554	9.4639	0.0262	2.6379	0.0221	2.6600	0.6996	0.0203	0.7199		2,613.5121	2,613.5121	0.0824		2,615.5715
Total	**1.5481**	**10.6397**	**12.2918**	**0.0495**	**3.2269**	**0.0688**	**3.2958**	**0.8692**	**0.0651**	**0.9343**		**5,092.4435**	**5,092.4435**	**0.2481**		**5,098.6470**

3.4 Paving - 2020

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	lb/day										lb/day					
Off-Road	1.3566	14.0656	14.6521	0.0228		0.7528	0.7528		0.6926	0.6926		2,207.7334	2,207.7334	0.7140		2,225.5841
Paving	0.4764					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.8329**	**14.0656**	**14.6521**	**0.0228**		**0.7528**	**0.7528**		**0.6926**	**0.6926**		**2,207.7334**	**2,207.7334**	**0.7140**		**2,225.5841**

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	lb/day										lb/day					
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
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
Worker	0.0767	0.0544	0.6015	1.6700e-003	0.1677	1.4000e-003	0.1691	0.0445	1.2900e-003	0.0458		166.1131	166.1131	5.2400e-003		166.2440
Total	**0.0767**	**0.0544**	**0.6015**	**1.6700e-003**	**0.1677**	**1.4000e-003**	**0.1691**	**0.0445**	**1.2900e-003**	**0.0458**		**166.1131**	**166.1131**	**5.2400e-003**		**166.2440**

3.4 Paving - 2020

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	lb/day										lb/day					
Off-Road	0.2805	1.2154	17.2957	0.0228		0.0374	0.0374		0.0374	0.0374	0.0000	2,207.7334	2,207.7334	0.7140		2,225.5841
Paving	0.4764					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.7568**	**1.2154**	**17.2957**	**0.0228**		**0.0374**	**0.0374**		**0.0374**	**0.0374**	**0.0000**	**2,207.7334**	**2,207.7334**	**0.7140**		**2,225.5841**

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	lb/day										lb/day					
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
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
Worker	0.0767	0.0544	0.6015	1.6700e-003	0.1677	1.4000e-003	0.1691	0.0445	1.2900e-003	0.0458		166.1131	166.1131	5.2400e-003		166.2440
Total	**0.0767**	**0.0544**	**0.6015**	**1.6700e-003**	**0.1677**	**1.4000e-003**	**0.1691**	**0.0445**	**1.2900e-003**	**0.0458**		**166.1131**	**166.1131**	**5.2400e-003**		**166.2440**

3.5 Architectural Coating - 2020

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	lb/day										lb/day					
Archit. Coating	43.8008					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**44.0429**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

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	lb/day										lb/day					
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
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
Worker	0.2402	0.1704	1.8848	5.2300e-003	0.5254	4.3900e-003	0.5297	0.1393	4.0500e-003	0.1434		520.4876	520.4876	0.0164		520.8977
Total	**0.2402**	**0.1704**	**1.8848**	**5.2300e-003**	**0.5254**	**4.3900e-003**	**0.5297**	**0.1393**	**4.0500e-003**	**0.1434**		**520.4876**	**520.4876**	**0.0164**		**520.8977**

3.5 Architectural Coating - 2020

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	lb/day										lb/day					
Archit. Coating	43.8008					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**43.8305**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

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	lb/day										lb/day					
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
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
Worker	0.2402	0.1704	1.8848	5.2300e-003	0.5254	4.3900e-003	0.5297	0.1393	4.0500e-003	0.1434		520.4876	520.4876	0.0164		520.8977
Total	**0.2402**	**0.1704**	**1.8848**	**5.2300e-003**	**0.5254**	**4.3900e-003**	**0.5297**	**0.1393**	**4.0500e-003**	**0.1434**		**520.4876**	**520.4876**	**0.0164**		**520.8977**

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	lb/day										lb/day					
Mitigated	5.3243	24.9456	62.2831	0.2042	16.6281	0.1804	16.8085	4.4501	0.1684	4.6185		20,777.4094	20,777.4094	1.1810		20,806.9347
Unmitigated	5.3243	24.9456	62.2831	0.2042	16.6281	0.1804	16.8085	4.4501	0.1684	4.6185		20,777.4094	20,777.4094	1.1810		20,806.9347

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Hotel	3,277.12	3,210.48	2332.40	7,475,015	7,475,015
Parking Lot	0.00	0.00	0.00		
Total	3,277.12	3,210.48	2,332.40	7,475,015	7,475,015

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-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Hotel	16.60	8.40	6.90	19.40	61.60	19.00	58	38	4
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Hotel	0.547192	0.045177	0.202743	0.121510	0.016147	0.006143	0.019743	0.029945	0.002479	0.002270	0.005078	0.000682	0.000891
Parking Lot	0.547192	0.045177	0.202743	0.121510	0.016147	0.006143	0.019743	0.029945	0.002479	0.002270	0.005078	0.000682	0.000891

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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	lb/day										lb/day					
NaturalGas Mitigated	0.2914	2.6492	2.2253	0.0159		0.2013	0.2013		0.2013	0.2013		3,179.0408	3,179.0408	0.0609	0.0583	3,197.9322
NaturalGas Unmitigated	0.2914	2.6492	2.2253	0.0159		0.2013	0.2013		0.2013	0.2013		3,179.0408	3,179.0408	0.0609	0.0583	3,197.9322

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	lb/day										lb/day					
Hotel	27021.8	0.2914	2.6492	2.2253	0.0159		0.2013	0.2013		0.2013	0.2013		3,179.0408	3,179.0408	0.0609	0.0583	3,197.9322
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
Total		**0.2914**	**2.6492**	**2.2253**	**0.0159**		**0.2013**	**0.2013**		**0.2013**	**0.2013**		**3,179.0408**	**3,179.0408**	**0.0609**	**0.0583**	**3,197.9322**

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	lb/day										lb/day					
Hotel	27.0218	0.2914	2.6492	2.2253	0.0159		0.2013	0.2013		0.2013	0.2013		3,179.0408	3,179.0408	0.0609	0.0583	3,197.9322
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
Total		**0.2914**	**2.6492**	**2.2253**	**0.0159**		**0.2013**	**0.2013**		**0.2013**	**0.2013**		**3,179.0408**	**3,179.0408**	**0.0609**	**0.0583**	**3,197.9322**

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	lb/day										lb/day					
Mitigated	8.7322	7.2000e-004	0.0786	1.0000e-005		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004		0.1679	0.1679	4.5000e-004		0.1790
Unmitigated	8.7322	7.2000e-004	0.0786	1.0000e-005		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004		0.1679	0.1679	4.5000e-004		0.1790

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	lb/day										lb/day					
Architectural Coating	0.5280					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.1969					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.3400e-003	7.2000e-004	0.0786	1.0000e-005		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004		0.1679	0.1679	4.5000e-004		0.1790
Total	**8.7322**	**7.2000e-004**	**0.0786**	**1.0000e-005**		**2.8000e-004**	**2.8000e-004**		**2.8000e-004**	**2.8000e-004**		**0.1679**	**0.1679**	**4.5000e-004**		**0.1790**

6.2 Area by SubCategory

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	lb/day										lb/day					
Architectural Coating	0.5280					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.1969					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	7.3400e-003	7.2000e-004	0.0786	1.0000e-005		2.8000e-004	2.8000e-004		2.8000e-004	2.8000e-004		0.1679	0.1679	4.5000e-004		0.1790
Total	**8.7322**	**7.2000e-004**	**0.0786**	**1.0000e-005**		**2.8000e-004**	**2.8000e-004**		**2.8000e-004**	**2.8000e-004**		**0.1679**	**0.1679**	**4.5000e-004**		**0.1790**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

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** AERMOD View Ver. 9.6.5
** Lakes Environmental Software Inc.
** Date: 6/7/2019
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** AERMOD Control Pathway
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   AVERTIME ANNUAL
   URBANOPT 9818605
   POLLUTID DPM
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CO FINISHED
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** AERMOD Source Pathway
**************************************
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SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
** ---------------------------------------------------------------
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** PREFIX
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** Elevated
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   SRCPARAM L0000567     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000568     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000569     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000570     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000571     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000572     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000573     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000574     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000575     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000576     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000577     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000578     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000579     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000580     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000581     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000582     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000583     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000584     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000585     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000586     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000587     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000588     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000589     0.000006542      0.00      3.72
0.70
```

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   SRCPARAM L0000590     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000591     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000592     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000593     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000594     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000595     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000596     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000597     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000598     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000599     0.000006542      0.00      3.72
0.70
   SRCPARAM L0000600     0.000006542      0.00      3.72
0.70
** ----------------------------------------------------------------
-------
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
****************************************
** AERMOD Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED "sand canyon resoort.rou"
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE sclr8.sfc
   PROFFILE sclr8.PFL
   SURFDATA 0 2008
   UAIRDATA 3190 2008
   SITEDATA 99999 2008
   PROFBASE 1100.0 FEET
ME FINISHED
**
****************************************
```

```
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
** Auto-Generated Plotfiles
   PLOTFILE ANNUAL ALL "sand canyon resoort.AD\AN00GALL.PLT" 31
   SUMMFILE "sand canyon resoort.sum"
OU FINISHED

 **********************************
 *** SETUP Finishes Successfully ***
 **********************************
```

```
 *** AERMOD - VERSION  18081 ***   *** C:\Users\Brett Pomeroy
\Dropbox\Pomeroy Environmental Services\AERMOD ***
06/07/19
 *** AERMET - VERSION  14134 ***   ***
***        09:37:05

PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN

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

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

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

 **Model Uses URBAN Dispersion Algorithm for the SBL for   107
Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   9818605.0 ;  Urban Roughness Length =
1.000 m

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

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

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  DPM

 **Model Calculates ANNUAL Averages Only

 **This Run Includes:    107 Source(s);       1 Source Group(s);
and       8 Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
```

```
                and:    107 VOLUME source(s)
                and:      0 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with      0
line(s)


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

 **The AERMET Input Meteorological Data Version Date:  14134

 **Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for
Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked
Values (SUMMFILE Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:
c for Calm Hours

m for Missing Hours

b for Both Calm and Missing Hours

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

 **Approximate Storage Requirements of Model =      3.5 MB of
RAM.

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

 **Detailed Error/Message File:   sand canyon resoort.err
 **File for Summary of Results:   sand canyon resoort.sum
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN

*** VOLUME SOURCE DATA ***

RELEASE	NUMBER EMISSION RATE	INIT.	INIT.	URBAN	EMISSION RATE			BASE			
SOURCE ID	PART. CATS.	(GRAMS/SEC)		SOURCE	X (METERS)	Y (METERS)	ELEV. (METERS)	HEIGHT (METERS)	SY (METERS)	SZ (METERS)	SCALAR VARY BY
L0000494	0	0.65420E-05			370243.0	3808983.8	521.3	0.00	3.72	0.70	YES
L0000495	0	0.65420E-05			370243.9	3808975.9	524.6	0.00	3.72	0.70	YES
L0000496	0	0.65420E-05			370244.8	3808967.9	527.8	0.00	3.72	0.70	YES
L0000497	0	0.65420E-05			370245.7	3808960.0	529.4	0.00	3.72	0.70	YES
L0000498	0	0.65420E-05			370246.6	3808952.0	530.6	0.00	3.72	0.70	YES
L0000499	0	0.65420E-05			370247.4	3808944.1	531.9	0.00	3.72	0.70	YES
L0000500	0	0.65420E-05			370248.3	3808936.1	533.3	0.00	3.72	0.70	YES
L0000501	0	0.65420E-05			370249.2	3808928.2	534.4	0.00	3.72	0.70	YES
L0000502	0	0.65420E-05			370250.1	3808920.2	535.5	0.00	3.72	0.70	YES
L0000503	0	0.65420E-05			370251.0	3808912.3	536.6	0.00	3.72	0.70	YES
L0000504	0	0.65420E-05			370251.9	3808904.3	537.4	0.00	3.72	0.70	YES
L0000505	0	0.65420E-05			370252.8	3808896.4	538.0	0.00	3.72	0.70	YES
L0000506	0	0.65420E-05			370253.7	3808888.4	538.7	0.00	3.72	0.70	YES
L0000507	0	0.65420E-05			370254.6	3808880.5	539.5	0.00	3.72	0.70	YES
L0000508	0	0.65420E-05			370255.5	3808872.5	540.1	0.00	3.72	0.70	YES

L0000509	0	0.65420E-05	370256.4	3808864.6	540.4	
0.00	3.72	0.70	YES			
L0000510	0	0.65420E-05	370257.3	3808856.6	540.8	
0.00	3.72	0.70	YES			
L0000511	0	0.65420E-05	370258.2	3808848.7	541.1	
0.00	3.72	0.70	YES			
L0000512	0	0.65420E-05	370259.1	3808840.7	540.3	
0.00	3.72	0.70	YES			
L0000513	0	0.65420E-05	370260.0	3808832.8	539.1	
0.00	3.72	0.70	YES			
L0000514	0	0.65420E-05	370263.2	3808829.2	539.3	
0.00	3.72	0.70	YES			
L0000515	0	0.65420E-05	370270.2	3808833.0	542.1	
0.00	3.72	0.70	YES			
L0000516	0	0.65420E-05	370277.3	3808836.7	544.3	
0.00	3.72	0.70	YES			
L0000517	0	0.65420E-05	370284.4	3808840.5	546.2	
0.00	3.72	0.70	YES			
L0000518	0	0.65420E-05	370291.4	3808844.2	547.8	
0.00	3.72	0.70	YES			
L0000519	0	0.65420E-05	370298.5	3808847.9	548.5	
0.00	3.72	0.70	YES			
L0000520	0	0.65420E-05	370305.6	3808851.7	546.4	
0.00	3.72	0.70	YES			
L0000521	0	0.65420E-05	370312.6	3808855.4	544.3	
0.00	3.72	0.70	YES			
L0000522	0	0.65420E-05	370319.7	3808859.2	542.3	
0.00	3.72	0.70	YES			
L0000523	0	0.65420E-05	370326.8	3808862.9	540.3	
0.00	3.72	0.70	YES			
L0000524	0	0.65420E-05	370333.9	3808866.7	538.7	
0.00	3.72	0.70	YES			
L0000525	0	0.65420E-05	370340.9	3808870.4	537.6	
0.00	3.72	0.70	YES			
L0000526	0	0.65420E-05	370348.0	3808874.2	536.9	
0.00	3.72	0.70	YES			
L0000527	0	0.65420E-05	370355.1	3808877.9	536.5	
0.00	3.72	0.70	YES			
L0000528	0	0.65420E-05	370359.6	3808882.4	535.5	
0.00	3.72	0.70	YES			
L0000529	0	0.65420E-05	370355.5	3808889.2	533.8	
0.00	3.72	0.70	YES			
L0000530	0	0.65420E-05	370351.3	3808896.1	531.7	
0.00	3.72	0.70	YES			
L0000531	0	0.65420E-05	370347.2	3808902.9	529.4	
0.00	3.72	0.70	YES			
L0000532	0	0.65420E-05	370343.1	3808909.8	527.3	
0.00	3.72	0.70	YES			
L0000533	0	0.65420E-05	370339.0	3808916.6	525.7	
0.00	3.72	0.70	YES			

*** MODELOPTs: RegDFAULT CONC ELEV URBAN

*** VOLUME SOURCE DATA ***

RELEASE	NUMBER EMISSION RATE	INIT.	INIT.	URBAN	EMISSION RATE			BASE			
SOURCE ID	PART. CATS.	(GRAMS/SEC)	SOURCE	SCALAR VARY BY	X (METERS)	Y (METERS)	ELEV. (METERS)	HEIGHT (METERS)	SY (METERS)	SZ (METERS)	
L0000534	0	0.65420E-05			370334.8	3808923.5	524.2	0.00	3.72	0.70	YES
L0000535	0	0.65420E-05			370330.7	3808930.3	522.9	0.00	3.72	0.70	YES
L0000536	0	0.65420E-05			370326.6	3808937.2	522.7	0.00	3.72	0.70	YES
L0000537	0	0.65420E-05			370322.5	3808944.1	523.9	0.00	3.72	0.70	YES
L0000538	0	0.65420E-05			370318.3	3808950.9	525.5	0.00	3.72	0.70	YES
L0000539	0	0.65420E-05			370314.2	3808957.8	527.5	0.00	3.72	0.70	YES
L0000540	0	0.65420E-05			370310.1	3808964.6	529.9	0.00	3.72	0.70	YES
L0000541	0	0.65420E-05			370306.0	3808971.5	530.8	0.00	3.72	0.70	YES
L0000542	0	0.65420E-05			370301.9	3808978.3	530.7	0.00	3.72	0.70	YES
L0000543	0	0.65420E-05			370297.7	3808985.2	529.6	0.00	3.72	0.70	YES
L0000544	0	0.65420E-05			370293.6	3808992.0	527.0	0.00	3.72	0.70	YES
L0000545	0	0.65420E-05			370289.4	3808998.8	525.0	0.00	3.72	0.70	YES
L0000546	0	0.65420E-05			370281.7	3808996.7	524.8	0.00	3.72	0.70	YES
L0000547	0	0.65420E-05			370274.0	3808994.6	524.8	0.00	3.72	0.70	YES
L0000548	0	0.65420E-05			370266.3	3808992.5	524.1	0.00	3.72	0.70	YES

L0000549	0	0.65420E-05	370258.5	3808990.4	522.6	
0.00	3.72	0.70	YES			
L0000550	0	0.65420E-05	370252.8	3808987.1	522.3	
0.00	3.72	0.70	YES			
L0000551	0	0.65420E-05	370254.1	3808979.2	525.0	
0.00	3.72	0.70	YES			
L0000552	0	0.65420E-05	370255.4	3808971.3	527.7	
0.00	3.72	0.70	YES			
L0000553	0	0.65420E-05	370256.7	3808963.4	529.8	
0.00	3.72	0.70	YES			
L0000554	0	0.65420E-05	370258.0	3808955.5	531.5	
0.00	3.72	0.70	YES			
L0000555	0	0.65420E-05	370259.2	3808947.6	533.4	
0.00	3.72	0.70	YES			
L0000556	0	0.65420E-05	370260.5	3808939.7	535.4	
0.00	3.72	0.70	YES			
L0000557	0	0.65420E-05	370261.8	3808931.8	536.7	
0.00	3.72	0.70	YES			
L0000558	0	0.65420E-05	370263.1	3808923.9	537.4	
0.00	3.72	0.70	YES			
L0000559	0	0.65420E-05	370264.4	3808916.0	538.0	
0.00	3.72	0.70	YES			
L0000560	0	0.65420E-05	370265.7	3808908.1	538.6	
0.00	3.72	0.70	YES			
L0000561	0	0.65420E-05	370266.9	3808900.2	540.0	
0.00	3.72	0.70	YES			
L0000562	0	0.65420E-05	370268.2	3808892.3	541.7	
0.00	3.72	0.70	YES			
L0000563	0	0.65420E-05	370269.5	3808884.4	543.3	
0.00	3.72	0.70	YES			
L0000564	0	0.65420E-05	370270.8	3808876.5	544.6	
0.00	3.72	0.70	YES			
L0000565	0	0.65420E-05	370272.1	3808868.6	544.6	
0.00	3.72	0.70	YES			
L0000566	0	0.65420E-05	370273.4	3808860.7	544.9	
0.00	3.72	0.70	YES			
L0000567	0	0.65420E-05	370279.9	3808862.9	544.5	
0.00	3.72	0.70	YES			
L0000568	0	0.65420E-05	370287.1	3808866.4	543.4	
0.00	3.72	0.70	YES			
L0000569	0	0.65420E-05	370294.3	3808869.8	541.8	
0.00	3.72	0.70	YES			
L0000570	0	0.65420E-05	370301.5	3808873.3	539.8	
0.00	3.72	0.70	YES			
L0000571	0	0.65420E-05	370308.7	3808876.8	538.0	
0.00	3.72	0.70	YES			
L0000572	0	0.65420E-05	370315.9	3808880.3	536.4	
0.00	3.72	0.70	YES			
L0000573	0	0.65420E-05	370323.1	3808883.7	534.4	
0.00	3.72	0.70	YES			

*** MODELOPTs: RegDFAULT CONC ELEV URBAN

*** VOLUME SOURCE DATA ***

RELEASE	NUMBER EMISSION RATE	INIT.	INIT.	URBAN	EMISSION RATE			BASE			
SOURCE ID	PART. CATS.	(GRAMS/SEC)	SOURCE	SCALAR VARY BY	X (METERS)	Y (METERS)	ELEV. (METERS)	HEIGHT (METERS)	SY (METERS)	SZ (METERS)	
L0000574	0	0.65420E-05			370329.1	3808887.6	532.3	0.00	3.72	0.70	YES
L0000575	0	0.65420E-05			370325.8	3808894.9	530.6	0.00	3.72	0.70	YES
L0000576	0	0.65420E-05			370322.4	3808902.1	529.2	0.00	3.72	0.70	YES
L0000577	0	0.65420E-05			370319.0	3808909.4	528.6	0.00	3.72	0.70	YES
L0000578	0	0.65420E-05			370315.6	3808916.6	528.8	0.00	3.72	0.70	YES
L0000579	0	0.65420E-05			370312.2	3808923.8	529.0	0.00	3.72	0.70	YES
L0000580	0	0.65420E-05			370308.8	3808931.1	529.3	0.00	3.72	0.70	YES
L0000581	0	0.65420E-05			370305.4	3808938.3	530.0	0.00	3.72	0.70	YES
L0000582	0	0.65420E-05			370302.0	3808945.6	532.0	0.00	3.72	0.70	YES
L0000583	0	0.65420E-05			370298.6	3808952.8	534.2	0.00	3.72	0.70	YES
L0000584	0	0.65420E-05			370295.2	3808960.1	534.7	0.00	3.72	0.70	YES
L0000585	0	0.65420E-05			370291.8	3808967.3	534.4	0.00	3.72	0.70	YES
L0000586	0	0.65420E-05			370288.4	3808974.5	531.6	0.00	3.72	0.70	YES
L0000587	0	0.65420E-05			370285.0	3808981.8	529.1	0.00	3.72	0.70	YES
L0000588	0	0.65420E-05			370278.2	3808980.1	528.6	0.00	3.72	0.70	YES

L0000589	0	0.65420E-05	370270.9	3808976.9	528.3	
0.00	3.72	0.70	YES			
L0000590	0	0.65420E-05	370270.0	3808970.6	529.4	
0.00	3.72	0.70	YES			
L0000591	0	0.65420E-05	370272.3	3808962.9	531.5	
0.00	3.72	0.70	YES			
L0000592	0	0.65420E-05	370274.5	3808955.3	533.3	
0.00	3.72	0.70	YES			
L0000593	0	0.65420E-05	370276.7	3808947.6	534.6	
0.00	3.72	0.70	YES			
L0000594	0	0.65420E-05	370279.0	3808939.9	535.5	
0.00	3.72	0.70	YES			
L0000595	0	0.65420E-05	370281.2	3808932.2	535.8	
0.00	3.72	0.70	YES			
L0000596	0	0.65420E-05	370283.4	3808924.5	535.9	
0.00	3.72	0.70	YES			
L0000597	0	0.65420E-05	370285.7	3808916.9	536.0	
0.00	3.72	0.70	YES			
L0000598	0	0.65420E-05	370287.9	3808909.2	536.2	
0.00	3.72	0.70	YES			
L0000599	0	0.65420E-05	370290.1	3808901.5	536.9	
0.00	3.72	0.70	YES			
L0000600	0	0.65420E-05	370292.4	3808893.8	537.7	
0.00	3.72	0.70	YES			

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN

*** SOURCE IDs
DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	L0000494 , L0000495 , L0000496 , L0000497 , L0000498 , L0000499 , L0000500 , L0000501 ,
	L0000502 , L0000503 , L0000504 , L0000505 , L0000506 , L0000507 , L0000508 , L0000509 ,
	L0000510 , L0000511 , L0000512 , L0000513 , L0000514 , L0000515 , L0000516 , L0000517 ,
	L0000518 , L0000519 , L0000520 , L0000521 , L0000522 , L0000523 , L0000524 , L0000525 ,
	L0000526 , L0000527 , L0000528 , L0000529 , L0000530 , L0000531 , L0000532 , L0000533 ,
	L0000534 , L0000535 , L0000536 , L0000537 , L0000538 , L0000539 , L0000540 , L0000541 ,
	L0000542 , L0000543 , L0000544 , L0000545 , L0000546 , L0000547 , L0000548 , L0000549 ,
	L0000550 , L0000551 , L0000552 , L0000553 , L0000554 , L0000555 , L0000556 , L0000557 ,
	L0000558 , L0000559 , L0000560 ,

```
L0000561    , L0000562    , L0000563    , L0000564    ,
L0000565    ,

             L0000566    , L0000567    , L0000568    ,
L0000569    , L0000570    , L0000571    , L0000572    ,
L0000573    ,

             L0000574    , L0000575    , L0000576    ,
L0000577    , L0000578    , L0000579    , L0000580    ,
L0000581    ,

             L0000582    , L0000583    , L0000584    ,
L0000585    , L0000586    , L0000587    , L0000588    ,
L0000589    ,

             L0000590    , L0000591    , L0000592    ,
L0000593    , L0000594    , L0000595    , L0000596    ,
L0000597    ,

             L0000598    , L0000599    , L0000600    ,
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN

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

URBAN ID	URBAN POP	SOURCE IDs
	9818605.	L0000494 , L0000495 , L0000496 , L0000497 , L0000498 , L0000499 , L0000500 , L0000501 ,
		L0000502 , L0000503 , L0000504 , L0000505 , L0000506 , L0000507 , L0000508 , L0000509 ,
		L0000510 , L0000511 , L0000512 , L0000513 , L0000514 , L0000515 , L0000516 , L0000517 ,
		L0000518 , L0000519 , L0000520 , L0000521 , L0000522 , L0000523 , L0000524 , L0000525 ,
		L0000526 , L0000527 , L0000528 , L0000529 , L0000530 , L0000531 , L0000532 , L0000533 ,
		L0000534 , L0000535 , L0000536 , L0000537 , L0000538 , L0000539 , L0000540 , L0000541 ,
		L0000542 , L0000543 , L0000544 , L0000545 , L0000546 , L0000547 , L0000548 , L0000549 ,
		L0000550 , L0000551 , L0000552 , L0000553 , L0000554 , L0000555 , L0000556 , L0000557 ,

```
             L0000558    , L0000559    , L0000560    ,
L0000561    , L0000562    , L0000563    , L0000564    ,
L0000565    ,

             L0000566    , L0000567    , L0000568    ,
L0000569    , L0000570    , L0000571    , L0000572    ,
L0000573    ,

             L0000574    , L0000575    , L0000576    ,
L0000577    , L0000578    , L0000579    , L0000580    ,
L0000581    ,

             L0000582    , L0000583    , L0000584    ,
L0000585    , L0000586    , L0000587    , L0000588    ,
L0000589    ,

             L0000590    , L0000591    , L0000592    ,
L0000593    , L0000594    , L0000595    , L0000596    ,
L0000597    ,

             L0000598    , L0000599    , L0000600    ,
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN

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

(METERS)

(370327.0, 3809048.8, 510.0, 1043.0, 0.0);
(370389.3, 3809018.3, 509.5, 1043.0, 0.0);
(370469.7, 3808962.6, 510.6, 1043.0, 0.0);
(370286.5, 3809144.3, 503.6, 1043.0, 0.0);
(370444.5, 3809064.3, 509.7, 1043.0, 0.0);
(370290.3, 3809094.4, 510.0, 1043.0, 0.0);
(370464.8, 3808935.0, 511.8, 1043.0, 0.0);
(370319.7, 3809118.9, 503.0, 1043.0, 0.0);

```
 *** AERMOD - VERSION  18081 ***   *** C:\Users\Brett Pomeroy
\Dropbox\Pomeroy Environmental Services\AERMOD ***
06/07/19
 *** AERMET - VERSION  14134 ***   ***
***        09:37:05

PAGE   8
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN

                                            *** 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,
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN

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

Surface file: sclr8.sfc
Met Version: 14134
Profile file: sclr8.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 0 Upper air station no.: 3190
Name: UNKNOWN Name: UNKNOWN
Year: 2008 Year: 2008

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
08	01	01	1	01	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.25	1.00	1.00	999.00	999.	-9.0	285.9	5.5
08	01	01	1	02	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.25	1.00	1.00	999.00	999.	-9.0	285.4	5.5
08	01	01	1	03	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.25	1.00	1.00	999.00	999.	-9.0	284.9	5.5
08	01	01	1	04	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.25	1.00	1.00	999.00	999.	-9.0	284.2	5.5
08	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.25	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	06	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.25	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	07	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.25	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	08	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.25	1.00	0.59	999.00	999.	-9.0	283.8	5.5
08	01	01	1	09	19.0	-9.000	-9.000	-9.000	50.	-999.	-99999.0	0.25	1.00	0.35	999.00	999.	-9.0	284.2	5.5
08	01	01	1	10	65.9	-9.000	-9.000	-9.000	138.	-999.	-99999.0	0.25	1.00	0.27	999.00	999.	-9.0	285.4	5.5
08	01	01	1	11	104.1	-9.000	-9.000	-9.000	323.	-999.	-99999.0	0.25	1.00	0.24	999.00	999.	-9.0	285.9	5.5
08	01	01	1	12	120.1	-9.000	-9.000	-9.000	539.	-999.	-99999.0								

```
0.25   1.00   0.23  999.00  999.   -9.0  286.4    5.5
 08 01 01   1 13  119.6 -9.000 -9.000 -9.000  690. -999. -99999.0
0.25   1.00   0.23  999.00  999.   -9.0  287.0    5.5
 08 01 01   1 14  102.8 -9.000 -9.000 -9.000  748. -999. -99999.0
0.25   1.00   0.24  999.00  999.   -9.0  288.1    5.5
 08 01 01   1 15   48.2 -9.000 -9.000 -9.000  769. -999. -99999.0
0.25   1.00   0.28  999.00  999.   -9.0  288.1    5.5
 08 01 01   1 16   23.6 -9.000 -9.000 -9.000  779. -999. -99999.0
0.25   1.00   0.36  999.00  999.   -9.0  287.0    5.5
 08 01 01   1 17 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.25   1.00   0.62  999.00  999.   -9.0  287.0    5.5
 08 01 01   1 18 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.25   1.00   1.00  999.00  999.   -9.0  286.4    5.5
 08 01 01   1 19 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.25   1.00   1.00  999.00  999.   -9.0  286.4    5.5
 08 01 01   1 20 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.25   1.00   1.00  999.00  999.   -9.0  286.4    5.5
 08 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.25   1.00   1.00  999.00  999.   -9.0  285.9    5.5
 08 01 01   1 22 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.25   1.00   1.00  999.00  999.   -9.0  285.9    5.5
 08 01 01   1 23 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.25   1.00   1.00  999.00  999.   -9.0  285.4    5.5
 08 01 01   1 24 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0
0.25   1.00   1.00  999.00  999.   -9.0  285.4    5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW
sigmaV
 08 01 01 01    5.5 0 -999.  -99.00   286.0
99.0  -99.00  -99.00
 08 01 01 01    9.1 1 -999.  -99.00  -999.0
99.0  -99.00  -99.00

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

*** MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE ANNUAL AVERAGE CONCENTRATION VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S):
L0000494 , L0000495 , L0000496 , L0000497 , L0000498 ,
L0000499 , L0000500 , L0000501 , L0000502 , L0000503 , L0000504 , L0000505 , L0000506 ,
L0000507 , L0000508 , L0000509 , L0000510 , L0000511 , L0000512 , L0000513 , L0000514 ,
L0000515 , L0000516 , L0000517 , L0000518 , L0000519 , L0000520 ,
L0000521 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
370326.97	3809048.80	0.03632	370389.27	3809018.26	0.02688
370469.70	3808962.58	0.01614	370286.53	3809144.32	0.01533
370444.53	3809064.32	0.01332	370290.35	3809094.37	0.02504
370464.81	3808934.98	0.01788	370319.69	3809118.95	0.01738

*** MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 5 YEARS ***

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

NETWORK GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	1ST HIGHEST VALUE IS	0.03632 AT (370326.97, 3809048.80, 510.00, 1043.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.02688 AT (370389.27, 3809018.26, 509.54, 1043.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.02504 AT (370290.35, 3809094.37, 509.98, 1043.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.01788 AT (370464.81, 3808934.98, 511.75, 1043.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.01738 AT (370319.69, 3809118.95, 503.01, 1043.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.01614 AT (370469.70, 3808962.58, 510.56, 1043.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.01533 AT (370286.53, 3809144.32, 503.64, 1043.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.01332 AT (370444.53, 3809064.32, 509.71, 1043.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)		
	10TH HIGHEST VALUE IS	0.00000 AT (0.00, 0.00, 0.00, 0.00, 0.00)		

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

```
 *** AERMOD - VERSION  18081 ***   *** C:\Users\Brett Pomeroy
\Dropbox\Pomeroy Environmental Services\AERMOD ***
06/07/19
 *** AERMET - VERSION  14134 ***   ***
***        09:37:05

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN

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

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

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
 A Total of         1397 Informational Message(s)

 A Total of        43848 Hours Were Processed

 A Total of            0 Calm Hours Identified

 A Total of         1397 Missing Hours Identified (  3.19
Percent)


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


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


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