BAY AREA AIR QUALITY MANAGEMENT DISTRICT

BAAQMD

Draft Facility-Wide

Health Risk Assessment

Facility # A0621

City of Santa Clara

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Draft Facility-Wide Health Risk Assessment Report

City of Santa Clara (Facility # A0621)
560 Robert Avenue, Santa Clara, CA 95050

1. Executive Summary

This facility is a power plant owned and operated by the City of Santa Clara's Silicon Valley Power (SVP). It is a 7 megawatt (MW), natural gas-fired, combined-cycle cogeneration facility located in Santa Clara, California. The facility started operating in 1980 and currently includes two gas turbines and two duct burners. These sources emit toxic air contaminants (TACs) due to the combustion of natural gas. Based on the Air District's 2017 toxic emission inventory for this facility, the Air District determined that this facility was required to undergo a facility-wide health risk assessment (HRA) to assess the applicability of the Air District's Regulation 11, Rule 18 "Reduction of Risk from Air Toxic Emissions at Existing Facilities", or Rule 11-18.

The Air District conducted a facility-wide HRA for the City of Santa Clara's power plant based on the Air District's updated 2017 toxic emissions inventory for this site, the Air District's 2016 HRA Guidelines, and the Air District's 2019 HRA Modeling Protocol. The AERMOD air dispersion computer model was used to estimate maximum 1-hour and annual average ambient air concentrations. California Air Resources Board's Hotspots Analysis and Reporting Program Version 2 (HARP2) was used to evaluate health risks. Estimated health risks from the City of Santa Clara are summarized in Table 1.

Table 1. Summary of Health Risks from the City of Santa Clara

	Resident	Worker	Student	Maximally Exposed Individual (MEI)
Cancer Risk per Million	0.017	0.041	0.0028	**0.041**
Chronic Hazard Index	0.00025	0.0055	0.000089	**0.0055**
Acute Hazard Index	NA	NA	NA	**0.0088**

For the maximally exposed individual (MEI), this facility-wide HRA identified a maximum cancer risk of **0.041 in a million**, a maximum chronic hazard index of **0.0055,** and an acute hazard index of **0.0088**. As illustrated in Figure 1, each health impact from this facility is less than the final risk action level specified in Regulation 11-18-218.2.[1]

[1] The final RALs identified in Regulation 11-18-218.2 became effective on January 1, 2020. Since the Air District is publishing the draft HRA for the City of Santa Clara after January 1, 2020, the health risks for this site are being compared to the final RALs.

Figure 1. Comparison of Health Risks to Risk Action Levels

The Air District's preliminary conclusion is that the City of Santa Clara will not be required to meet the risk reduction requirements identified in Regulation 11-18-301 as all the estimated health risks from this facility are less than the Rule 11-18 RALs.

In accordance with Regulation 11-18-403, the facility was given 90 days to review and comment on this preliminary HRA. The Air District has made the necessary corrections to the HRA and is now making this draft HRA available for public review for a period of 45 days. The Air District will consider and respond to any comments received regarding this draft HRA before finalizing this HRA.

2. Purpose

The purpose of this facility-wide HRA is to determine if the Air District's Regulation 11, Rule 18 "Reduction of Risk from Air Toxic Emissions at Existing Facilities", or Rule 11-18, applies to this facility. Rule 11-18 requires existing facilities to reduce health risk if any of the facility's estimated health risks exceed a Rule 11-18 risk action level (RAL). The Rule 11-18 risk action levels are identified in Regulation 11-18-218 and are summarized below:

Table 2. Regulation 11-18-218 Risk Action Levels (RALs)

Health Risk Category	Final Risk Action Levels, Effective 1/1/2020
Cancer Risk	≥ 10 per million
Chronic Non-Cancer Hazard Index	≥ 1.0
Acute Non-Cancer Hazard Index	≥ 1.0

If a facility-wide estimated health risk level exceeds any of the three RALs, the facility must submit a Risk Reduction Plan (RRP) that demonstrates how this facility will either (a) reduce health risks below the final RALs, or (b) ensure that each significant source of risk is equipped with best available retrofit control technology for toxics, or TBARCT. If the facility-wide HRA demonstrates that Rule 11-18 applies, the HRA will also identify each significant source of health risk that could be subject to the rule's TBARCT requirements. The significant source thresholds and final health risk goals for Rule 11-18 are summarized below:

Table 3. Rule 11-18 Risk Reduction Goals

Health Risk Category	Significant Source Thresholds	Final Facility Wide Health Risk Goal
Cancer Risk	≥ 1.0 per million	< 10 per million
Chronic Non-Cancer Hazard Index	≥ 0.2	< 1.0
Acute Non-Cancer Hazard Index	≥ 0.2	< 1.0

3. Background

The City of Santa Clara's power plant (Air District Facility # A0621) has been operating at 560 Robert Avenue in Santa Clara, CA since 1980. The current facility includes two gas turbines and two duct burners that are fired exclusively by natural gas. These sources emit toxic air contaminants (TACs) due to the combustion of natural gas.

Exhaust gases from Gas Turbine S-1 are combined with those from Duct Burner S-3, and likewise, exhaust gases from Gas Turbine S-2 are combined with those from Duct Burner S-4, resulting in two sets of devices (e.g. S-1/S-3 and S-2/S-4). The emissions from the gas turbine and duct burner cannot be separated when determining compliance with individual emissions limits. In accordance with BAAQMD Regulation 1-107, such combined emissions shall be subject to the most stringent applicable limitations and requirements. Because of this determination, the applicable requirements for the Duct Burners are largely the same as those for the Gas Turbines. For the purposes of this HRA, each gas turbine/duct burner set will be treated as a single emissions unit.

The Air District uses a toxic emissions-based screening threshold called a "Prioritization Score" to determine if a facility needs to have an updated facility-wide HRA to assess Rule 11-18 applicability. Prioritization score calculation procedures are available on the Air District's web site.[2] For the purposes of determining Rule 11-18 HRA requirements, the Air District uses a proximity adjustment factor of 1.0 for all prioritization score calculations.

Based on the Air District's updated 2017 toxic emission inventory for this facility, the prioritization scores were 36.11 for cancer risk and 2.48 for chronic non-cancer. Under Phase II of the Air District's Rule 11-18 Implementation Procedures,[3] any facility with a prioritization score greater than 10 for cancer risk and less than 250 or greater than 1.0 for chronic non-cancer is required to have a facility-wide HRA conducted in accordance with the Air District's 2016 HRA Guidelines.[4] Since the updated prioritization scores for the City of Santa Clara exceed the thresholds, this facility is required to undergo a facility-wide HRA to assess Rule 11-18 applicability.

4. Source List and Source Emissions

The cogeneration plant of the City of Santa Clara has two turbines and two burners. The capacities and 2017 throughput rates are summarized below.

Table 4. Turbines and Duct Burners – Capacities and 2017 Throughput Rates

	Maximum Permitted Capacity		2017 Throughput Rates
Source	Turbine and Burner	Natural gas (MM BTU/hour)	Natural gas (MM BTU/year)
S-1 turbine	S-1/S-3 combined	75.48	436,060
S-3 duct burner			
S-2 turbine	S-2/S-4 combined	75.48	391,231
S-4 duct burner			

The Air District updated the annual toxic emissions inventory for this facility based on natural gas usage data reported by the facility for 2017 and Air-District approved toxic emission factors. For calendar year 2017, the facility reported using 427,507,228 standard cubic feet (scf) of natural gas at S-1/S-3 and 383,564,042 scf of natural gas at S-2/S-4. The maximum permitted level for each turbine is 589 million (MM) scf per year. The 2017 throughput levels for sources S-1/S-3 and sources S-2/S-4 are approximately 73% and 65% of the maximum permitted levels for each

[2] http://www.baaqmd.gov/~/media/dotgov/files/rules/regulation-11-rule-18/documents/20171003_priorproc_1118-pdf.pdf?la=en

[3] http://www.baaqmd.gov/~/media/files/ab617-community-health/facility-risk-reduction/implementation-procedures-pdf.pdf?la=en

[4] http://www.baaqmd.gov/~/media/files/planning-and-research/permit-modeling/hra_guidelines_12_7_2016_clean-pdf.pdf?la=en

turbine. Both the 2018 and 2019 throughputs were slightly lower than the 2017 throughput levels that were used in this report.

These usage rates are equivalent to 436,060 MM BTU/year for S-1/S-3 and 391,231 MM BTU/year for sources S-2/S-4. The toxic emission factors are based on source test data for benzene and formaldehyde[5] and the Air District's default emission factors for gas turbines for all other TACs.

The Air District created a maximum 1-hour emissions inventory for this facility based on the maximum combustion capacity of each gas turbine/duct burner emissions unit (75 MM BTU/hour) and Air District approved toxic emission factors. Source test-based emission factors were used for benzene and formaldehyde[5] and Air District default emission factors were used for all other TACs.

The facility-wide TAC emissions inventory is summarized below for each emissions point.

Table 5. 2017 Emission Inventory for Facility # A0621, City of Santa Clara

POLLUTANT – TAC	S-1 / S-3		S-2 / S-4	
	Lbm/Year	Lbm/Hour	Lbm/Year	Lbm/Hour
1,3-BUTADIENE [1]	2.64E-02	4.58E-06	2.37E-02	4.58E-06
ACETALDEHYDE	5.84E+01	1.01E-02	5.24E+01	1.01E-02
ACROLEIN	8.07E+00	1.40E-03	7.24E+00	1.40E-03
ARSENIC [1, 3]	9.64E-03	1.67E-06	8.65E-03	1.67E-06
BENZENE [2]	2.89E+00	6.68E-04	1.96E+00	6.68E-04
BERYLLIUM [1, 3]	2.10E-02	3.63E-06	1.88E-02	3.63E-06
CADMIUM [3]	8.20E-02	1.42E-05	7.36E-02	1.42E-05
CHROMIUM 6+ [3]	8.02E-03	1.39E-06	7.20E-03	1.39E-06
COPPER [3]	7.67E-01	1.33E-04	6.89E-01	1.33E-04
ETHYL BENZENE	7.66E+00	1.33E-03	6.88E+00	1.33E-03
FORMALDEHYDE [2]	7.41E+01	2.64E-02	8.29E+01	2.64E-02
LEAD [3]	2.30E-01	3.98E-05	2.06E-01	3.98E-05
MANGANESE [3]	6.41E-01	1.11E-04	5.75E-01	1.11E-04
MERCURY [3]	6.41E-01	1.11E-04	5.75E-01	1.11E-04
NAPHTHALENE	7.10E-01	1.23E-04	6.37E-01	1.23E-04
n-HEXANE	1.11E+02	1.92E-02	9.94E+01	1.92E-02

[5] A source test was conducted by BAAQMD at Facility A0621 on October 25, 2018. The source test included testing for exhaust flow rate, benzene concentration, and formaldehyde concentration on each gas turbine/duct burner stack. The testing included three 1-hour runs for each stack. The average results for each stack were used to develop the benzene and formaldehyde emission factors for each gas turbine/duct burner set that were used for the annual emission inventory. The maximum benzene and formaldehyde emission factors determined for any 1-hour run at either stack was used to create the maximum 1-hour inventory.

POLLUTANT – TAC	S-1 / S-3		S-2 / S-4	
	Lbm/Year	Lbm/Hour	Lbm/Year	Lbm/Hour
NICKEL [3]	8.20E-02	1.42E-05	7.36E-02	1.42E-05
PAH (AS B(a)P-EQUIV)	9.26E-03	1.60E-06	8.31E-03	1.60E-06
PROPYLENE (PROPENE)	3.30E+02	5.70E-02	2.96E+02	5.70E-02
PROPYLENE OXIDE [1]	8.49E+00	1.47E-03	7.62E+00	1.47E-03
SELENIUM [3]	1.62E-01	2.81E-05	1.46E-01	2.81E-05
TOLUENE	3.04E+01	5.26E-03	2.72E+01	5.26E-03
XYLENES (mixed isomers)	1.12E+01	1.93E-03	1.00E+01	1.93E-03

1 The emission factor reference indicates that this compound was not detected (ND) during source testing. In accordance with Air District conventions, the emission factor used for this inventory is calculated based on ½ of the detection limit-based emission factor.

2 Emission rates were derived from an October 2018 source test on these sources at this facility.

3 Emission rates were derived from BAAQMD source tests conducted in December 2019 on natural gas fired turbines.

Except for benzene and formaldehyde, TAC emission factors (EFs) for all other compounds are based on Air District default TAC EFs for gas turbines.[6] Air District default emission factors (EFs) for TACs emitted from cogeneration plants are determined using Environmental Protection Agency (EPA) AP-42 Compilation of Air Emission Factors, fifth edition, Chapter 3.1, and CARB's California Air Toxic Emission Factors (CATEF) database[7], BAAQMD Permit Handbook Chapter 2.41 Micro Turbines[8], and BAAQMD source test data. As noted in Table 6, the Air District used 50% (or one-half) of the detection limit to calculate the emission factor when a compound was identified as non-detect for the source test on which the reported emission factor was based.

The benzene and formaldehyde EFs are based on Air District source testing conducted at both turbines on October 25, 2018. According to BAAQMD TAC Emission Factor Guidelines, site specific data is preferred to default factors. Therefore, both benzene and formaldehyde emission factors are derived from this site-specific source test. The average benzene and formaldehyde emission factor from the three test runs were used for annual emission calculations, while the highest (1-hour) sampling data from the three test runs was used as maximum 1-hour emission calculations for Regulation 11-18 facility wide HRA.

6 BAAQMD Toxic Air Contaminant Emission Factor Guidelines, Appendix A: Default TAC Emission Factors for Specific Source Categories, Table A-2-1 Gas Turbines – Natural Gas Fired No Add-on Emission Controls will soon be posted here: https://www.baaqmd.gov/community-health/facility-risk-reduction-program

7 https://www.arb.ca.gov/ei/catef/catef.htm

8 http://www.baaqmd.gov/~/media/files/engineering/permit-handbook/baaqmd-permit-handbook.pdf?la=en

Table 6. TAC DEFAULT EFs for City of Santa Clara Each Turbine

TABLE A-2.1 GAS TURBINES - NATURAL GAS FIRED - NO ADD-ON EMISSION CONTROLS

Pollutant- TAC	CAS #	DEFAULT EMISSION FACTORS LBM/MMBTU	Comments [1, 2, 3, 4, 5]
ACETALDEHYDE	75-07-0	1.34E-04	CATEF FACTOR - NATURAL GAS
ACROLEIN	107-02-8	1.85E-05	CATEF FACTOR - NATURAL GAS
ARSENIC	7440-38-2	2.21E-08	BAAQMD Source Test # 20105; ND [2, 3]
BENZENE	71-43-2	8.91E-05	CATEF FACTOR - NATURAL GAS
BERYLLIUM	7440-41-7	4.81E-08	BAAQMD Source Test # 20105; ND [2, 3]
1,3-BUTADIENE	106-99-0	6.07E-08	CATEF FACTOR - NATURAL GAS; ND [3]
CADMIUM	7440-43-9	1.88E-07	BAAQMD Source Test # 20105 [2]
CHROMIUM 6+	18540-29-9	1.84E-08	BAAQMD Source Test # 20121 [2]
COPPER	7440-50-8	1.76E-06	BAAQMD Source Test # 20105 [2]
ETHYL BENZENE	100-41-4	1.76E-05	CATEF FACTOR - NATURAL GAS [5]
FORMALDEHYDE	50-00-0	6.74E-03	CATEF FACTOR - NATURAL GAS
n-HEXANE	110-54-3	2.54E-04	CATEF FACTOR - NATURAL GAS
LEAD	7439-92-1	5.27E-07	BAAQMD Source Test # 20105 [2]
MANGANESE	7439-96-5	1.47E-06	BAAQMD Source Test # 20105 [2]
MERCURY	7439-97-6	1.47E-06	BAAQMD Source Test # 20105 [2]
NAPHTHALENE	91-20-3	1.63E-06	CATEF FACTOR- NATURAL GAS
NICKEL	7440-02-0	1.88E-07	BAAQMD Source Test # 20105 [2]
PAH (AS B(a)P-EQUIV)	1150/1151	2.12E-08	CATEF FACTOR - NATURAL GAS [5]
PROPYLENE (PROPENE)	115-07-1	7.56E-04	CATEF FACTOR - NATURAL GAS
PROPYLENE OXIDE	75-56-9	1.95E-05	CATEF FACTOR - NATURAL GAS; ND [3]
SELENIUM	7782-49-2	3.72E-07	BAAQMD Source Test # 20105 [2]
TOLUENE	108-88-3	6.96E-05	CATEF FACTOR - NATURAL GAS [5]
XYLENES (mixed isomers)	1330-20-7	2.56E-05	CATEF FACTOR - NATURAL GAS [5]

1 Conversions from lbs/MM scf to lbs/MM BTU used a natural gas heat content of 1020 BTU/scf (HHV).

2 BAAQMD Source Test # 20105 and # 20121 were conducted on a gas turbine and heat recovery steam generator fired on natural gas during December 10-12, 2019. Although the tested units were equipped with SCR and oxidation catalyst controls, these add-on controls are not expected to impact emission rates for particulate TACs. Therefore, the metal emission factors derived from these source tests are representative of both controlled and uncontrolled natural gas fired turbines.

3 The emission factor reference indicates that this compound was not detected (ND) during source testing. In accordance with Air District conventions, the emission factor used for this inventory is calculated based on ½ of the detection limit-based emission factor. In some cases, the emission factor reference also used this ½ detection limit convention and reported the emission factor as ½ of the detection limit-based emission factor. Air District staffed reviewed the basis of each detection limit-based emission factor to ensure that this convention was applied to the reported factor only if the reported factor did not already include this convention.

4 Acronyms:

BTU	British Thermal Unit
HHV	high heating value
LBM	pounds
MM	million
ND	not detected
NP	value not provided
SCF	standard cubic feet

5 Although the emission factor from AP-42 Chapter 3.1-3 was higher than the CATEF emission factor for that pollutant, the Air District chose the CATEF factor as the default factor. In accordance with Air District TAC Emission Factor Guidelines, CATEF data is preferred over AP-42 data.

5. Air Dispersion Modeling

The AERMOD air dispersion computer model (Version 19191) was used to estimate annual average and maximum 1-hour ambient air concentrations. Model runs were made with 5 years of San Jose International Airport (KSJC) meteorological data (2013-2017). This AERMET data includes an adjustment for surface friction (u*) that improves model performance at low wind speeds. The new AERMET sets were prepared by BAAQMD meteorology staff. Upper air data coincident with the local meteorological data was taken from the Oakland International Airport station. Land use parameters including surface roughness length, albedo, and Bowen ratio were evaluated using the EPA AERSURFACE tool.

Dispersion coefficients for air dispersion modeling were selected based on the land use classification scheme proposed by Auer (Auer, 1978)[9]. The classification determination involves assessing land use by Auer's categories within a 3-km radius of the facility site. EPA's AERSURFACE tool (version 13016) with United States Geological Survey (USGS) National Land Cover Data (NLCD92) was used to summarize the land use classifications within a 3-km radius of the facility[10]. The land use was determined to be urban, because Auer Rural land use categories made up 41% of the total area (Urban was 59%). Therefore, the AERMOD runs were made with urban dispersion coefficients.

The model is referenced in North American Datum of 1983 (NAD 83) Universal Transverse Mercator (UTM) coordinates and uses 10-meter resolution terrain data from Santa Clara East and Santa Clara West Counties and 1/3 arc second National Elevation Dataset (NED) files. The KSJC meteorological site is located a little more than 1 mile southeast of the facility and appears to the most representative meteorological data available for the modeled area based on elevation, surface characteristics, wind direction, and wind speed.

Stack and building parameters for the analysis were based on information provided by the facility and summarized in Table 7. All modeled sources are open, vertical oriented exhaust stack outlets (point sources). Regulatory default options were selected, consistent with established practices for use of AERMOD in regulatory applications. In addition, since the sources operate continuously, no scalars were applied to each modeled source

Receptor networks were constructed for the dispersion analysis including a fine grid containing receptors spaced 20 meters apart extending 400 meters from the sources, and a rectangular grid containing receptors spaced 20 meters apart extending 500 meters in the Y direction and 800 meters in the X direction. The rectangular grid represents the residential receptors. The grid receptor locations inside of the facility boundary are not included in the HRA. All receptors were modeled with a flagpole height of 1.5 meters to approximate an average human breathing zone. A total of 2630 receptors were included in the analysis. Since the point of maximum impact (PMI)

[9] Auer, Jr., A.H. (1978). Correlation of Land Use and Cover with Meteorological Anomalies. Journal of Applied Meteorology, 17(5), 636-643.

[10] See Appendix A of the BAAQMD Health Risk Assessment Modeling Protocol: https://www.baaqmd.gov/community-health/facility-risk-reduction-program

was located in the street, where no actual receptors are expected, additional discrete receptors (21 receptors) were added along the property line to clarify impacts for actual receptor locations.

Table 7. Point Source Release Parameters

Point Sources	Exhaust Direction	Outlet Type	Stack Height (above ground level)	Exit Diameter	Cross Sectional Area	Typical Exhaust Gas Flow Rate	Typical Exhaust Temperature
	Vertical or Horizontal	Rain Cap or Open (or Hinged Rain Flap)	(ft)	(ft)	ft^2	(Actual, wet cfm)	(degrees F)
S-1 & S-3	Vertical	Open	50	5.64	25	36,646	282
S-2 & S-4	Vertical	Open	50	5.64	25	26,646	282

6. HARP2 Risk Assessment

The HARP2 Air Dispersion Modeling and Risk Tool (ADMRT) was used to evaluate health risk in the following categories: (1) Cancer Risk and (2) Chronic Hazard Index for Residential, Off-site Worker and Student receptors; and (3) Acute Hazard Index for the maximally exposed individual (MEI).

- Individual cancer risk is the increased chance for a person to contract cancer after long-term exposure to facility emissions (for example, 30 years for a resident and 25 years for a worker).
- The chronic hazard index is a ratio of annual average concentrations of TACs in the air to established chronic reference exposure levels (RELs). A chronic hazard index below 1.0 indicates that adverse non-cancer health effects from long-term exposure are not expected.
- The acute hazard index is a ratio of maximum 1-hour average concentrations of TACs in the air to established acute RELs. An acute hazard index below 1.0 indicates that adverse non-cancer health effects from infrequent short-term exposure are not expected.

Chronic exposure assumptions assume that TAC emissions are continuous and that pollutant concentrations are annual average values. Acute exposure assumes a maximum hourly emission rate. Dispersion modeling for the ADMRT is based on unit emission rates of 1.0 grams per second for each source (or combined source) and determines 1-hour and annual average unit concentrations in micrograms per cubic meter, per gram per second (X/Q). Health risk estimates were calculated in accordance with the BAAQMD's Air Toxics NSR Program HRA Guidelines, dated December 2016. Since the facility's TAC emissions include multi-pathway pollutants (arsenic, beryllium, cadmium, chromium VI, lead, mercury, nickel, PAHs), several non-inhalation exposure pathways were also included in the HRA, including dermal adsorption, soil ingestion, and mother's milk ingestion. Though the gas turbines and duct burners have no controls (e.g., no particulate emission control devices), these sources are considered to be controlled sources because internal combustion engines powered by compressed natural gas emit particulate matter less than

2.5 microns. Therefore, a deposition rate of 0.02 meters per second was chosen when determining multi-pathway health impacts.

Residential Receptors:

Estimates of residential risk assume potential exposure to annual average TAC concentrations occur 350 days per year, for 30 years. In addition, residential risk estimates assume a 95th percentile breathing rate, for age groups younger than two years old, and 80th percentile breathing rate, for age groups that are older than or equal to two years of age.

Residential cancer risk estimates include age sensitivity factors (ASFs) and fraction of time at home (FAH) adjustments. The ASFs are age-specific weighting factors used in calculating cancer risks from exposures of infants, children and adolescents, to reflect their anticipated special sensitivity to carcinogens. For risk assessment of residential receptors, FAH (73%) was applied to age groups greater than or equal to 16 years, per BAAQMD's policy.

Worker Receptors:

Risk estimates for offsite workers assume potential exposure occurs 8 hours per day, 250 days per year, for 25 years. For offsite workers, the 95th percentile 8-hour breathing rate based on moderate activity was assumed. Continuous operation is assumed for this facility; no worker adjustment factor was applied to off-site worker cancer risk estimates.

Student Receptors:

For children ages 2 up to 16 years at schools and daycare facilities outside of the home, risk estimates assume potential exposure occurs 10 hours per day, 180 days per year, for 9 years. The 95th percentile 8-hour breathing rate based on moderate activity (for age group: 2<16 years; 520 L/kg-8 hours) was assumed for all students.

Receptor-specific exposure assumptions are summarized in Table 8.

Table 8. Exposure Assumptions by Receptor Type

Receptor Type	Exposure Frequency and Duration			Intake Rate % Breathing Rate Category		Exposed Person's Age Range
	Days per Year	Hours per Day	Years			
Residential	350	24	30	RMP using the Derived Method	95th percentile for age groups < 2 years, and 80th percentile for age groups ≥ 2 years	> 3rd Trimester
Worker	250	8	25	OEHHA Derived Method	8-hr breathing rate with moderate intensity	> 16 years
Student	180	10	9	95th percentile high end	8-hr breathing rate with moderate intensity	< 16 years

7. Summary of Results

The estimated facility-wide health risks resulting from stationary source operations at the City of Santa Clara are summarized in Table 9 below. At the MEI locations for each health risk category, the maximum estimated health risks are: 0.041 in a million for cancer risk, 0.0055 for chronic hazard index, and 0.0088 for acute hazard index. Chromium VI[11] and cadmium[11] are the major contributors to cancer risk for residential and worker receptors. Mercury[11] and arsenic[11] are the major contributor to chronic hazard index for all receptors. Acrolein[12] and formaldehyde are the major contributors to the acute hazard index, where the identified target organ system of concern is the eye system.

Table 9. Health Risks from Facility # A0621 at 2017 Throughput Level

Receptor (1)	NAD 83 UTM Coordinates (meters)		Cancer Risk (in a million)	Chronic HI	Max Acute HI (1-hour)
	Easting (x)	Northing (y)			
Resident	593,026	4,135,684	0.017	0.00025	NA
Worker	593,646	4,135,704	**0.041**	**0.0055**	NA
Student-Scott Lane Elementary School	592,161	4,135,201	0.0028	0.000089	NA
Acute MEI	593,756	4,135,770	NA	NA	**0.0088**

(1) The health risk contour maps in Appendix C show the health risks at *potential* receptor locations near this facility. For each type of health risk, the point of maximum impact, or PMI, occurs along the fence line of the facility next to a road. However, the health risks at the PMI and at other fence line locations occur in areas where there are no *actual* receptors, or exposed individuals (EI), as defined in Regulation 11-18-208. The results reported in Table 9 reflect locations where there is an *actual* EI. The health risk values in bold text are the maximum values.

The Air District compared the facility-wide estimated health risks from Table 9 to the final RALs identified in Table 2. Maximum cancer risk, chronic hazard index, and acute hazard index were each below the applicable final RAL for that health risk category. Detailed results of this comparison are presented below.

[11] Chromium VI, cadmium, mercury, and arsenic were determined using BAAQMD source tests #20105 and #20121. Arsenic emissions are based on detection limits rather than measured data. Since cancer risk and chronic hazard index were both far below the significant source thresholds, no further refinements of these health impacts were necessary.

[12] Acrolein was determined using CATEF emission factors for gas turbines fired on natural gas. Due to problems with the acrolein test method, the Air District typically does not include acrolein contributions in the final risk results. However, this refinement was not made here, because the total acute impact is far below the risk action level.

Table 10: Pollutant Risk Contributions at Highest Receptor

Risk Category	Risk Value	NAD 83 UTM Coordinates (meters)		Risk Driver 1	%	Risk Driver 2	%
Cancer Risk in a Million	**0.041**	593,646	4,135,704	Chromium Vl	45%	Cadmium	13%
Chronic Hazard Index (CNS)	**0.0055**	593,646	4,135,704	Mercury	64%	Arsenic	26%
Acute Hazard Index (EYE)	**0.0088**	593,756	4,135,770	Acrolein	53%	Formaldehyde	45%

Table 11 summarizes the maximum source risks for each turbine and duct burner combination (S-1/S-3 and S-2/S-4.) As shown in Table 11, for nearby receptors, the estimated cancer risk for each turbine/duct burner source group was 0.02 in a million. The estimated chronic hazard index for each source group was 0.0027 and 0.0028 for worker receptors. The estimated acute hazard index for each source group was 0.0059 to 0.0029. Each source group (S-1/S-3 and S-2/S-4) is not considered to be a significant source of health risk, as no health risk category for each source group exceeds a significant source threshold. No further action is required, because facility-wide health risks do not exceed a RAL.

Table 11. Maximum Source Risks for Each Gas Turbine/Duct Burner

	Source Risks for S-1/S-3	Source Risks for S-2/S-4	Significant Source Thresholds
Cancer Risk per Million	0.02	0.02	1.0
Chronic HI	0.0027	0.0028	0.2
Acute HI	0.0059	0.0029	0.2

8. Preliminary Conclusions

This facility-wide HRA results in estimated health risks for the maximally exposed individual, or MEI, of: a cancer risk of **0.041 in a million**, a chronic hazard index of **0.0055**, and an acute hazard index of **0.0088**. The facility-wide cancer risk, chronic hazard index, and the acute hazard index are each below the final RALs that became effective on January 1, 2020.

In accordance with Regulation 11-18-403, the Air District has provided a preliminary HRA to the facility. The facility provided comments, and the Air District revised the HRA in response to these comments.

The Air-District is ready to publish a draft HRA for public comment. The public will have 45 days to review and comment on the draft HRA. The Air District will consider and respond to all public comments before making a final decision on this HRA.

The Air District's preliminary conclusion is that the City of Santa Clara will not be subject to the risk reduction requirements of Regulation 11-18 for the SVP facility. The Risk Reduction Plan (RRP) requirements identified in Regulation 11-18-301 will not apply, and no further action is required.

9. Appendix A – AERMOD Input Files

Revised Run for Acute, Residential and Worker PMI

```
 Input File - C:\HRSAs\Reg11Rule18\Plant_621\Revised Acute Run\City_Santa_Clara_5yrs_OTHER.DTA

Output File - C:\HRSAs\Reg11Rule18\Plant_621\Revised Acute Run\City_Santa_Clara_5yrs_OTHER.LST

   Met File - C:\HRSAs\Reg11Rule18\Plant_621\Met_Station\KSJC_2013_2017.SFC


 *** Message Summary For AERMOD Model Setup ***

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

A Total of            0 Fatal Error Message(s)
A Total of            2 Warning Message(s)
A Total of            0 Informational Message(s)


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


   ********   WARNING MESSAGES   ********
ME W186    2750       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used          0.50
ME W187    2750       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

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


*** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                    ***        12/06/19
*** AERMET - VERSION  18081 ***   ***                                                                  ***        10:26:56
                                                                                                                 PAGE   1
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*

                                       ***    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     2 Source(s),
  for Total of    1 Urban Area(s):
  Urban Population =   1952872.0 ;  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:
        ADJ_U*   - Use ADJ_U* option for SBL in AERMET
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  OTHER

**Model Calculates  1 Short Term Average(s) of:   1-HR
    and Calculates PERIOD Averages

**This Run Includes:      2 Source(s);       2 Source Group(s); and    2651 Receptor(s)

               with:      2 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      0 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 RLINE/RLINEXT 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:  18081

**Output Options Selected:
         Model Outputs Tables of PERIOD Averages by Receptor
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         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) =    15.50 ;  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 =      3.9 MB of RAM.

 **Input Runstream File:          City_Santa_Clara_5yrs_OTHER.DTA
 **Output Print File:             City_Santa_Clara_5yrs_OTHER.LST

 **File for Summary of Results:   C:\HRSAs\Reg11Rule18\Plant_621\Revised Acute Run\City_Santa_Clara_5yrs_OTHER.SUM

 *** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                    ***        12/06/19
 *** AERMET - VERSION  18081 ***   ***                                                                  ***        10:26:56
                                                                                                                 PAGE   2
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*


                                            *** POINT SOURCE DATA ***

              NUMBER EMISSION RATE                    BASE     STACK   STACK    STACK     STACK    BLDG   URBAN  CAP/  EMIS RATE
  SOURCE       PART.  (GRAMS/SEC)     X         Y      ELEV.    HEIGHT  TEMP.   EXIT VEL. DIAMETER  EXISTS SOURCE HOR   SCALAR
    ID         CATS.               (METERS)  (METERS) (METERS) (METERS) (DEG.K)  (M/SEC)   (METERS)                       VARY BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 S1               0   0.10000E+01  593492.8 4135796.2    14.2    15.24   412.04     7.45     1.72    YES     YES   NO
 S2               0   0.10000E+01  593483.7 4135796.1    14.2    15.24   412.04     5.41     1.72    YES     YES   NO

 *** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                    ***        12/06/19
 *** AERMET - VERSION  18081 ***   ***                                                                  ***        10:26:56
                                                                                                                 PAGE   3
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*


                                       *** SOURCE IDs DEFINING SOURCE GROUPS ***

 SRCGROUP ID                                    SOURCE IDs
 -----------                                    ----------


  S1         S1          ,

  S2         S2          ,

 *** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                    ***        12/06/19
 *** AERMET - VERSION  18081 ***   ***                                                                  ***        10:26:56
                                                                                                                 PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*


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

  URBAN ID   URBAN POP                           SOURCE IDs
```

```
 --------   ---------                                  ----------


             1952872.   S1          , S2          ,

*** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                  ***        12/06/19
*** AERMET - VERSION  18081 ***   ***                                                               ***        10:26:56
                                                                                                              PAGE   5
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*

                                    *** DIRECTION SPECIFIC BUILDING DIMENSIONS ***


SOURCE ID: S1
 IFV    BH      BW      BL     XADJ    YADJ     IFV    BH      BW      BL     XADJ    YADJ
   1    0.0,    0.0,    0.0,    0.0,    0.0,      2    6.7,   32.0,   26.4,   11.3,   19.3,
   3    0.0,    0.0,    0.0,    0.0,    0.0,      4    0.0,    0.0,    0.0,    0.0,    0.0,
   5    0.0,    0.0,    0.0,    0.0,    0.0,      6    0.0,    0.0,    0.0,    0.0,    0.0,
   7    0.0,    0.0,    0.0,    0.0,    0.0,      8    0.0,    0.0,    0.0,    0.0,    0.0,
   9    0.0,    0.0,    0.0,    0.0,    0.0,     10    9.8,   92.4,  207.6,   19.2,  -18.8,
  11    0.0,    0.0,    0.0,    0.0,    0.0,     12    0.0,    0.0,    0.0,    0.0,    0.0,
  13    6.7,   31.1,   31.8,  -42.6,   16.6,     14    6.7,   32.1,   30.2,  -44.3,   11.9,
  15    6.7,   32.1,   27.7,  -44.6,    6.8,     16    9.8,  196.8,  119.8,   19.4,  101.0,
  17    6.7,   29.2,   20.3,  -41.3,   -3.8,     18    6.7,   28.4,   18.5,  -38.6,   -9.7,
  19    6.7,   30.7,   22.8,  -38.7,  -14.7,     20    6.7,   32.0,   26.4,  -37.7,  -19.3,
  21    5.5,   27.2,   32.4,  -44.2,    5.2,     22    5.5,   30.4,   31.0,  -44.0,    0.3,
  23    5.5,   32.6,   28.6,  -42.5,   -4.5,     24    5.5,   33.9,   25.4,  -39.7,   -9.3,
  25    5.5,   34.2,   21.4,  -35.7,  -13.7,     26    5.5,   33.4,   16.7,  -30.6,  -17.8,
  27    0.0,    0.0,    0.0,    0.0,    0.0,     28    9.8,   92.4,  207.6, -226.8,   18.8,
  29    9.8,  117.1,  205.0, -227.0,   -5.6,     30    9.8,  138.2,  196.3, -220.3,  -29.9,
  31    9.8,  158.6,  182.7, -208.1,  -51.6,     32    9.8,  176.8,  166.2, -190.7,  -70.4,
  33    9.8,  189.7,  145.2, -167.5,  -87.0,     34    9.8,  196.8,  119.8, -139.2, -101.0,
  35    0.0,    0.0,    0.0,    0.0,    0.0,     36    0.0,    0.0,    0.0,    0.0,    0.0,


SOURCE ID: S2
 IFV    BH      BW      BL     XADJ    YADJ     IFV    BH      BW      BL     XADJ    YADJ
   1    4.3,   61.7,   44.3,   -3.9,   21.3,      2    4.3,   61.8,   52.6,  -11.7,   25.7,
   3    6.7,   32.4,   29.2,   10.9,   15.5,      4    0.0,    0.0,    0.0,    0.0,    0.0,
   5    0.0,    0.0,    0.0,    0.0,    0.0,      6    0.0,    0.0,    0.0,    0.0,    0.0,
   7    0.0,    0.0,    0.0,    0.0,    0.0,      8    0.0,    0.0,    0.0,    0.0,    0.0,
   9    0.0,    0.0,    0.0,    0.0,    0.0,     10    4.3,   37.4,   38.5,  -52.1,   14.8,
  11    4.3,   41.1,   42.9,  -56.6,    8.8,     12    4.3,   43.6,   46.0,  -59.4,    2.5,
  13    4.3,   44.8,   47.7,  -60.4,   -3.8,     14    6.7,   32.1,   30.2,  -38.5,   19.0,
  15    6.7,   32.1,   27.7,  -40.2,   14.8,     16    6.7,   31.1,   24.4,  -40.6,   10.1,
  17    6.7,   29.2,   20.3,  -39.8,    5.2,     18    6.7,   28.4,   18.5,  -38.7,   -0.6,
  19    6.7,   30.7,   22.8,  -40.4,   -5.8,     20    6.7,   32.0,   26.4,  -40.9,  -10.8,
  21    6.7,   32.4,   29.2,  -40.1,  -15.5,     22    5.5,   30.4,   31.0,  -49.9,    7.2,
  23    5.5,   32.6,   28.6,  -49.5,    1.2,     24    5.5,   33.9,   25.4,  -47.6,   -4.8,
  25    5.5,   34.2,   21.4,  -44.3,  -10.7,     26    5.5,   33.4,   16.7,  -39.6,  -16.3,
  27    0.0,    0.0,    0.0,    0.0,    0.0,     28    9.8,   92.4,  207.6, -235.8,   17.2,
```

```
  29    9.8,  117.1,  205.0, -235.5,   -8.8,     30    9.8,  138.2,  196.3, -228.2,  -34.6,
  31    9.8,  158.6,  182.7, -215.0,  -57.5,     32    9.8,  176.8,  166.2, -196.5,  -77.4,
  33    9.8,  189.7,  145.2, -172.0,  -95.0,     34    4.3,   40.1,   44.1,    8.4,   21.4,
  35    4.3,   64.0,   40.2,    6.3,   12.2,     36    4.3,   59.7,   35.0,    4.1,   16.2,
```



```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*

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

    ( 593432.5, 4135841.0,      13.4,      13.4,      1.5);      ( 593422.4, 4135837.3,      13.6,      13.6,      1.5);
    ( 593415.4, 4135830.0,      13.5,      13.5,      1.5);      ( 593409.6, 4135816.0,      13.7,      13.7,      1.5);
    ( 593406.3, 4135807.2,      13.7,      13.7,      1.5);      ( 593405.9, 4135795.7,      13.7,      13.7,      1.5);
    ( 593405.6, 4135784.2,      13.8,      13.8,      1.5);      ( 593424.7, 4135784.6,      14.1,      14.1,      1.5);
    ( 593443.9, 4135784.9,      14.3,      14.3,      1.5);      ( 593463.1, 4135785.3,      14.3,      14.3,      1.5);
    ( 593482.3, 4135785.7,      14.2,      14.2,      1.5);      ( 593484.9, 4135787.6,      14.2,      14.2,      1.5);
    ( 593496.4, 4135788.8,      14.1,      14.1,      1.5);      ( 593504.4, 4135791.5,      14.1,      14.1,      1.5);
    ( 593505.2, 4135792.1,      14.1,      14.1,      1.5);      ( 593504.7, 4135808.1,      14.0,      14.0,      1.5);
    ( 593504.3, 4135824.2,      13.9,      13.9,      1.5);      ( 593503.8, 4135840.2,      13.2,      13.2,      1.5);
    ( 593502.8, 4135842.9,      13.2,      13.2,      1.5);      ( 593485.1, 4135842.5,      13.2,      13.2,      1.5);
    ( 593467.4, 4135842.0,      13.3,      13.3,      1.5);      ( 593449.7, 4135841.6,      13.3,      13.3,      1.5);
    ( 593432.0, 4135841.1,      13.4,      13.4,      1.5);      ( 593405.6, 4135384.2,      16.1,      16.1,      1.5);
    ( 593285.6, 4135404.2,      16.7,      16.7,      1.5);      ( 593305.6, 4135404.2,      16.4,      16.4,      1.5);
    ( 593325.6, 4135404.2,      16.4,      16.4,      1.5);      ( 593345.6, 4135404.2,      16.3,      16.3,      1.5);
    ( 593365.6, 4135404.2,      16.3,      16.3,      1.5);      ( 593385.6, 4135404.2,      16.1,      16.1,      1.5);
    ( 593405.6, 4135404.2,      16.1,      16.1,      1.5);      ( 593425.6, 4135404.2,      16.4,      16.4,      1.5);
    ( 593445.6, 4135404.2,      16.7,      16.7,      1.5);      ( 593465.6, 4135404.2,      16.8,      16.8,      1.5);
    ( 593485.6, 4135404.2,      16.7,      16.7,      1.5);      ( 593505.6, 4135404.2,      15.9,      15.9,      1.5);
    ( 593525.6, 4135404.2,      16.1,      16.1,      1.5);      ( 593545.6, 4135404.2,      16.2,      16.2,      1.5);
    ( 593565.6, 4135404.2,      16.1,      16.1,      1.5);      ( 593585.6, 4135404.2,      15.8,      15.8,      1.5);
    ( 593605.6, 4135404.2,      16.0,      16.0,      1.5);      ( 593245.6, 4135424.2,      16.8,      16.8,      1.5);
    ( 593265.6, 4135424.2,      16.7,      16.7,      1.5);      ( 593285.6, 4135424.2,      16.6,      16.6,      1.5);
    ( 593305.6, 4135424.2,      16.5,      16.5,      1.5);      ( 593325.6, 4135424.2,      16.4,      16.4,      1.5);
    ( 593345.6, 4135424.2,      16.2,      16.2,      1.5);      ( 593365.6, 4135424.2,      16.2,      16.2,      1.5);
    ( 593385.6, 4135424.2,      16.2,      16.2,      1.5);      ( 593405.6, 4135424.2,      16.2,      16.2,      1.5);
    ( 593425.6, 4135424.2,      16.3,      16.3,      1.5);      ( 593445.6, 4135424.2,      16.4,      16.4,      1.5);
    ( 593465.6, 4135424.2,      16.4,      16.4,      1.5);      ( 593485.6, 4135424.2,      16.2,      16.2,      1.5);
    ( 593505.6, 4135424.2,      16.0,      16.0,      1.5);      ( 593525.6, 4135424.2,      16.1,      16.1,      1.5);
    ( 593545.6, 4135424.2,      16.2,      16.2,      1.5);      ( 593565.6, 4135424.2,      15.8,      15.8,      1.5);
    ( 593585.6, 4135424.2,      15.9,      15.9,      1.5);      ( 593605.6, 4135424.2,      16.0,      16.0,      1.5);
    ( 593625.6, 4135424.2,      15.9,      15.9,      1.5);      ( 593645.6, 4135424.2,      16.0,      16.0,      1.5);
    ( 593205.6, 4135444.2,      16.7,      16.7,      1.5);      ( 593225.6, 4135444.2,      16.7,      16.7,      1.5);
    ( 593245.6, 4135444.2,      16.7,      16.7,      1.5);      ( 593265.6, 4135444.2,      16.7,      16.7,      1.5);
    ( 593285.6, 4135444.2,      16.6,      16.6,      1.5);      ( 593305.6, 4135444.2,      16.6,      16.6,      1.5);
    ( 593325.6, 4135444.2,      16.4,      16.4,      1.5);      ( 593345.6, 4135444.2,      16.1,      16.1,      1.5);
    ( 593365.6, 4135444.2,      16.1,      16.1,      1.5);      ( 593385.6, 4135444.2,      16.2,      16.2,      1.5);
```

```
    ( 593405.6, 4135444.2,      16.4,      16.4,       1.5);         ( 593425.6, 4135444.2,      16.3,      16.3,       1.5);
    ( 593445.6, 4135444.2,      16.3,      16.3,       1.5);         ( 593465.6, 4135444.2,      16.4,      16.4,       1.5);
    ( 593485.6, 4135444.2,      15.9,      15.9,       1.5);         ( 593505.6, 4135444.2,      15.9,      15.9,       1.5);
    ( 593525.6, 4135444.2,      16.1,      16.1,       1.5);         ( 593545.6, 4135444.2,      16.1,      16.1,       1.5);
    ( 593565.6, 4135444.2,      16.0,      16.0,       1.5);         ( 593585.6, 4135444.2,      15.9,      15.9,       1.5);
    ( 593605.6, 4135444.2,      15.9,      15.9,       1.5);         ( 593625.6, 4135444.2,      15.8,      15.8,       1.5);
    ( 593645.6, 4135444.2,      15.8,      15.8,       1.5);         ( 593665.6, 4135444.2,      15.9,      15.9,       1.5);
    ( 593685.6, 4135444.2,      16.0,      16.0,       1.5);         ( 593165.6, 4135464.2,      16.6,      16.6,       1.5);
    ( 593185.6, 4135464.2,      16.4,      16.4,       1.5);         ( 593205.6, 4135464.2,      16.4,      16.4,       1.5);

*** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                        ***        12/06/19
*** AERMET - VERSION  18081 ***   ***                                                                      ***        10:26:56
                                                                                                                      PAGE  36
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*

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

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

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


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

                                                1.54,   3.09,   5.14,   8.23,  10.80,

*** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                        ***        12/06/19
*** AERMET - VERSION  18081 ***   ***                                                                      ***        10:26:56
                                                                                                                      PAGE  37
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*

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

  Surface file:   KSJC_2013_2017.SFC                                                                 Met Version:  18081
  Profile file:   KSJC_2013_2017.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:    23293                 Upper air station no.:    23230
                 Name: N Y. MINETA SN JO INTL APT, CA             Name: UNKNOWN
                 Year:   2013                                     Year:   2013
```

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
13	01	01	1	01	-17.4	0.169	-9.000	-9.000	-999.	167.	31.4	0.02	2.57	1.00	2.62	136.	7.9	277.0	2.0
13	01	01	1	02	-12.5	0.137	-9.000	-9.000	-999.	122.	20.8	0.02	2.57	1.00	2.16	129.	7.9	277.0	2.0
13	01	01	1	03	-4.1	0.080	-9.000	-9.000	-999.	55.	11.3	0.05	2.57	1.00	1.14	227.	7.9	276.4	2.0
13	01	01	1	04	-6.8	0.103	-9.000	-9.000	-999.	80.	14.8	0.05	2.57	1.00	1.43	102.	7.9	276.4	2.0
13	01	01	1	05	-10.0	0.126	-9.000	-9.000	-999.	108.	18.3	0.05	2.57	1.00	1.72	79.	7.9	277.0	2.0
13	01	01	1	06	-6.3	0.096	-9.000	-9.000	-999.	71.	12.8	0.02	2.57	1.00	1.55	153.	7.9	277.5	2.0
13	01	01	1	07	-2.4	0.062	-9.000	-9.000	-999.	37.	9.0	0.02	2.57	1.00	0.92	171.	7.9	277.5	2.0
13	01	01	1	08	-7.0	0.105	-9.000	-9.000	-999.	82.	15.0	0.05	2.57	0.74	1.45	6.	7.9	277.5	2.0
13	01	01	1	09	-0.3	0.039	-9.000	-9.000	-999.	21.	19.3	0.02	2.57	0.39	0.62	119.	7.9	279.2	2.0
13	01	01	1	10	65.7	0.147	0.659	0.005	159.	135.	-4.4	0.05	2.57	0.27	1.37	228.	7.9	280.9	2.0
13	01	01	1	11	118.0	0.197	1.211	0.006	550.	209.	-5.9	0.05	2.57	0.23	1.91	208.	7.9	281.4	2.0
13	01	01	1	12	147.9	0.180	1.536	0.008	894.	184.	-3.6	0.05	2.57	0.21	1.64	225.	7.9	283.1	2.0
13	01	01	1	13	152.7	0.150	1.579	0.007	941.	139.	-2.0	0.02	2.57	0.21	1.54	302.	7.9	283.8	2.0
13	01	01	1	14	132.9	0.201	1.528	0.006	980.	216.	-5.6	0.05	2.57	0.22	1.94	277.	7.9	284.9	2.0
13	01	01	1	15	89.1	0.138	1.349	0.005	1005.	124.	-2.7	0.02	2.57	0.25	1.48	308.	7.9	285.4	2.0
13	01	01	1	16	25.1	0.174	0.887	0.005	1012.	174.	-19.0	0.05	2.57	0.33	1.86	10.	7.9	285.4	2.0
13	01	01	1	17	-18.7	0.221	-9.000	-9.000	-999.	249.	53.5	0.05	2.57	0.57	2.89	12.	7.9	283.8	2.0
13	01	01	1	18	-15.5	0.159	-9.000	-9.000	-999.	153.	27.9	0.05	2.57	1.00	2.13	353.	7.9	282.5	2.0
13	01	01	1	19	-18.6	0.183	-9.000	-9.000	-999.	188.	36.9	0.05	2.57	1.00	2.50	225.	7.9	280.9	2.0
13	01	01	1	20	-4.1	0.078	-9.000	-9.000	-999.	59.	10.5	0.02	2.57	1.00	1.26	136.	7.9	280.4	2.0
13	01	01	1	21	-11.8	0.133	-9.000	-9.000	-999.	117.	19.6	0.02	2.57	1.00	2.10	125.	7.9	278.8	2.0
13	01	01	1	22	-7.6	0.106	-9.000	-9.000	-999.	83.	14.3	0.02	2.57	1.00	1.70	110.	7.9	277.5	2.0
13	01	01	1	23	-6.2	0.095	-9.000	-9.000	-999.	71.	12.7	0.02	2.57	1.00	1.54	146.	7.9	277.0	2.0
13	01	01	1	24	-15.2	0.152	-9.000	-9.000	-999.	142.	25.4	0.02	2.57	1.00	2.37	130.	7.9	277.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
13	01	01	01	7.9	1	136.	2.62	277.1	99.0	-99.00	-99.00

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

*** AERMOD - VERSION 19191 *** *** Plant 621 City of Santa Clara *** 12/06/19
*** AERMET - VERSION 18081 *** *** *** 10:26:56
PAGE 38

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN ADJ_U*

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: S1 ***
INCLUDING SOURCE(S): S1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
593432.50	4135841.00	0.66686	593422.40	4135837.30	0.68680
593415.40	4135830.00	0.65563	593409.60	4135816.00	0.56120

593406.30	4135807.20	0.50948	593405.90	4135795.70	0.46114
593405.60	4135784.20	0.42880	593424.70	4135784.60	0.41563
593443.90	4135784.90	0.36124	593463.10	4135785.30	0.23233
593482.30	4135785.70	0.03687	593484.90	4135787.60	0.01380
593496.40	4135788.80	0.00211	593504.40	4135791.50	0.01840
593505.20	4135792.10	0.02208	593504.70	4135808.10	0.05583
593504.30	4135824.20	0.22077	593503.80	4135840.20	0.34255
593502.80	4135842.90	0.35626	593485.10	4135842.50	0.38801
593467.40	4135842.00	0.47421	593449.70	4135841.60	0.58093
593432.00	4135841.10	0.66920	593405.60	4135384.20	0.09638
593285.60	4135404.20	0.08257	593305.60	4135404.20	0.08583
593325.60	4135404.20	0.08908	593345.60	4135404.20	0.09238
593365.60	4135404.20	0.09574	593385.60	4135404.20	0.09931
593405.60	4135404.20	0.10288	593425.60	4135404.20	0.10656
593445.60	4135404.20	0.11084	593465.60	4135404.20	0.11623
593485.60	4135404.20	0.12356	593505.60	4135404.20	0.13404
593525.60	4135404.20	0.14782	593545.60	4135404.20	0.16609
593565.60	4135404.20	0.18845	593585.60	4135404.20	0.21400
593605.60	4135404.20	0.24120	593245.60	4135424.20	0.08061
593265.60	4135424.20	0.08393	593285.60	4135424.20	0.08735
593305.60	4135424.20	0.09094	593325.60	4135424.20	0.09457
593345.60	4135424.20	0.09838	593365.60	4135424.20	0.10216
593385.60	4135424.20	0.10603	593405.60	4135424.20	0.11004
593425.60	4135424.20	0.11426	593445.60	4135424.20	0.11914
593465.60	4135424.20	0.12527	593485.60	4135424.20	0.13363
593505.60	4135424.20	0.14538	593525.60	4135424.20	0.16152
593545.60	4135424.20	0.18265	593565.60	4135424.20	0.20850
593585.60	4135424.20	0.23756	593605.60	4135424.20	0.26839
593625.60	4135424.20	0.30001	593645.60	4135424.20	0.33455
593205.60	4135444.20	0.07832	593225.60	4135444.20	0.08159
593245.60	4135444.20	0.08510	593265.60	4135444.20	0.08874
593285.60	4135444.20	0.09255	593305.60	4135444.20	0.09651
593325.60	4135444.20	0.10064	593345.60	4135444.20	0.10496
593365.60	4135444.20	0.10921	593385.60	4135444.20	0.11350
593405.60	4135444.20	0.11793	593425.60	4135444.20	0.12277
593445.60	4135444.20	0.12829	593465.60	4135444.20	0.13516
593485.60	4135444.20	0.14487	593505.60	4135444.20	0.15839
593525.60	4135444.20	0.17709	593545.60	4135444.20	0.20171

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: S2 ***
INCLUDING SOURCE(S): S2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
593755.14	4135797.30	21.55870	(13041519)	593755.50	4135792.52	21.66902	(13041519)
593755.50	4135787.74	21.73192	(15111517)	593756.97	4135777.82	22.13704	(15111517)
593756.97	4135773.77	22.05450	(15111517)	593756.24	4135770.10	21.89149	(15111517)
593756.24	4135764.95	21.40708	(15111517)	593756.97	4135759.43	20.88987	(13040801)
593756.97	4135753.92	20.22152	(13040801)	593756.61	4135749.88	19.62650	(13040801)
593756.61	4135744.73	18.74301	(13040801)				

*** AERMOD - VERSION 19191 *** *** Plant 621 City of Santa Clara *** 12/06/19
*** AERMET - VERSION 18081 *** *** *** 10:26:56
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*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN ADJ_U*

*** THE SUMMARY OF MAXIMUM PERIOD (43824 HRS) RESULTS ***

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

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
S1	1ST HIGHEST VALUE IS	2.70555 AT (593665.60, 4135704.20, 14.10, 14.10, 1.50)	DC	
	2ND HIGHEST VALUE IS	2.67196 AT (593645.60, 4135704.20, 14.13, 14.13, 1.50)	DC	
	3RD HIGHEST VALUE IS	2.66864 AT (593685.60, 4135704.20, 14.02, 14.02, 1.50)	DC	
	4TH HIGHEST VALUE IS	2.64298 AT (593705.60, 4135684.20, 14.28, 14.28, 1.50)	DC	
	5TH HIGHEST VALUE IS	2.60550 AT (593685.60, 4135684.20, 14.30, 14.30, 1.50)	DC	
	6TH HIGHEST VALUE IS	2.60483 AT (593705.60, 4135704.20, 13.90, 13.90, 1.50)	DC	
	7TH HIGHEST VALUE IS	2.59862 AT (593725.60, 4135704.20, 13.70, 13.70, 1.50)	DC	
	8TH HIGHEST VALUE IS	2.58666 AT (593665.60, 4135684.20, 14.37, 14.37, 1.50)	DC	
	9TH HIGHEST VALUE IS	2.58513 AT (593725.60, 4135684.20, 13.71, 13.71, 1.50)	DC	
	10TH HIGHEST VALUE IS	2.58242 AT (593645.60, 4135724.20, 13.83, 13.83, 1.50)	DC	
S2	1ST HIGHEST VALUE IS	3.01256 AT (593645.60, 4135704.20, 14.13, 14.13, 1.50)	DC	
	2ND HIGHEST VALUE IS	2.98187 AT (593625.60, 4135704.20, 14.05, 14.05, 1.50)	DC	
	3RD HIGHEST VALUE IS	2.97555 AT (593645.60, 4135684.20, 14.38, 14.38, 1.50)	DC	
	4TH HIGHEST VALUE IS	2.97035 AT (593665.60, 4135684.20, 14.37, 14.37, 1.50)	DC	
	5TH HIGHEST VALUE IS	2.89905 AT (593665.60, 4135704.20, 14.10, 14.10, 1.50)	DC	
	6TH HIGHEST VALUE IS	2.86266 AT (593685.60, 4135684.20, 14.30, 14.30, 1.50)	DC	
	7TH HIGHEST VALUE IS	2.82810 AT (593625.60, 4135724.20, 13.89, 13.89, 1.50)	DC	
	8TH HIGHEST VALUE IS	2.82424 AT (593625.60, 4135684.20, 14.25, 14.25, 1.50)	DC	
	9TH HIGHEST VALUE IS	2.82086 AT (593665.60, 4135664.20, 14.39, 14.39, 1.50)	DC	
	10TH HIGHEST VALUE IS	2.82079 AT (593685.60, 4135664.20, 14.47, 14.47, 1.50)	DC	

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

```
 *** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                  ***        12/06/19
 *** AERMET - VERSION  18081 ***   ***                                                               ***        10:26:56
                                                                                                               PAGE 175
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*

                                          *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***

Revised Run with additional receptors for Acute PMI
                                ** CONC OF OTHER    IN MICROGRAMS/M**3                        **

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

S1       HIGH   1ST HIGH VALUE IS      72.38184  ON 17092719: AT (  593745.60,  4135744.20,    13.59,    13.59,    1.50)  DC

S2       HIGH   1ST HIGH VALUE IS      31.07076  ON 15070109: AT (  593385.60,  4135784.20,    14.72,    14.72,    1.50)  DC


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

 *** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                  ***        12/06/19
 *** AERMET - VERSION  18081 ***   ***                                                               ***        10:26:56
                                                                                                               PAGE 176
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*

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

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

 A Total of            0 Fatal Error Message(s)
 A Total of            4 Warning Message(s)
 A Total of          930 Informational Message(s)

 A Total of        43824 Hours Were Processed

 A Total of          530 Calm Hours Identified

 A Total of          400 Missing Hours Identified (  0.91 Percent)


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


    ********   WARNING MESSAGES   ********
 ME W186    2750       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used          0.50
```

```
 ME W187    2750       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
 CN W305       5       WAKFLG: Stack height > or = EPA formula height for SRCID:            S1
 CN W305       5       WAKFLG: Stack height > or = EPA formula height for SRCID:            S2

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

Revised Run for School PMI

```
**BEE-Line Software:  (Version 12.01) data input file
**  Model: AERMOD.EXE     Input File Creation Date: 2/25/2020  Time: 12:33:21 PM
NO ECHO




  Input File - C:\IrmasHRAs\Reg11Rule18\Plant_621\School\City_Santa_Clara_5yrs_OTHER.DTA

 Output File - C:\IrmasHRAs\Reg11Rule18\Plant_621\School\City_Santa_Clara_5yrs_OTHER.LST

    Met File - C:\IrmasHRAs\Reg11Rule18\Plant_621\Met_Station\KSJC_2013_2017.SFC


  *** Message Summary For AERMOD Model Setup ***

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

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of            0 Informational Message(s)


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


    ********   WARNING MESSAGES   ********
 ME W186     715       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used          0.50
 ME W187     715       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

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


 *** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                  ***        02/25/20
```

```
*** AERMET - VERSION  18081 ***   ***                                                    ***        12:33:23
                                                                                                   PAGE   1
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*

                                       ***     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     2 Source(s),
  for Total of    1 Urban Area(s):
  Urban Population =   1952872.0 ;  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:
        ADJ_U*   - Use ADJ_U* option for SBL in AERMET
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  OTHER

**Model Calculates  1 Short Term Average(s) of:   1-HR
    and Calculates PERIOD Averages

**This Run Includes:      2 Source(s);       2 Source Group(s); and     616 Receptor(s)

               with:      2 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      0 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 RLINE/RLINEXT 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:  18081

**Output Options Selected:
        Model Outputs Tables of PERIOD Averages by Receptor
        Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
        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) =    15.50 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                           ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.6 MB of RAM.

**Input Runstream File:          City_Santa_Clara_5yrs_OTHER.DTA
**Output Print File:             City_Santa_Clara_5yrs_OTHER.LST

**File for Summary of Results:   C:\IrmasHRAs\Reg11Rule18\Plant_621\School\City_Santa_Clara_5yrs_OTHER.SUM

*** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                          ***        02/25/20
*** AERMET - VERSION  18081 ***   ***                                                                       ***        12:33:23
                                                                                                                      PAGE   2
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*


                                                *** POINT SOURCE DATA ***

             NUMBER EMISSION RATE                  BASE     STACK   STACK    STACK     STACK    BLDG   URBAN  CAP/  EMIS RATE
  SOURCE      PART.  (GRAMS/SEC)     X        Y     ELEV.    HEIGHT  TEMP.   EXIT VEL. DIAMETER  EXISTS SOURCE HOR   SCALAR
    ID        CATS.              (METERS) (METERS) (METERS) (METERS) (DEG.K)  (M/SEC)   (METERS)                       VARY BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

S1              0   0.10000E+01  593492.8 4135796.2    14.2    15.24   412.04     7.45     1.72    YES     YES   NO
S2              0   0.10000E+01  593483.7 4135796.1    14.2    15.24   412.04     5.41     1.72    YES     YES   NO

*** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                          ***        02/25/20
*** AERMET - VERSION  18081 ***   ***                                                                       ***        12:33:23
                                                                                                                      PAGE   3
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*


                                          *** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID                                    SOURCE IDs
-----------                                    ----------
```

```
 S1         S1          ,

 S2         S2          ,

*** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                  ***        02/25/20
*** AERMET - VERSION  18081 ***   ***                                                               ***        12:33:23
                                                                                                              PAGE   4
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*


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

 URBAN ID   URBAN POP                                  SOURCE IDs
 --------   ---------                                  ----------


             1952872.   S1          , S2          ,

*** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                  ***        02/25/20
*** AERMET - VERSION  18081 ***   ***                                                               ***        12:33:23
                                                                                                              PAGE   5
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*

                                    *** DIRECTION SPECIFIC BUILDING DIMENSIONS ***


SOURCE ID: S1
 IFV    BH      BW      BL     XADJ     YADJ     IFV    BH      BW      BL     XADJ     YADJ
   1    0.0,    0.0,    0.0,    0.0,     0.0,     2    6.7,   32.0,   26.4,   11.3,   19.3,
   3    0.0,    0.0,    0.0,    0.0,     0.0,     4    0.0,    0.0,    0.0,    0.0,    0.0,
   5    0.0,    0.0,    0.0,    0.0,     0.0,     6    0.0,    0.0,    0.0,    0.0,    0.0,
   7    0.0,    0.0,    0.0,    0.0,     0.0,     8    0.0,    0.0,    0.0,    0.0,    0.0,
   9    0.0,    0.0,    0.0,    0.0,     0.0,    10    9.8,   92.4,  207.6,   19.2,  -18.8,
  11    0.0,    0.0,    0.0,    0.0,     0.0,    12    0.0,    0.0,    0.0,    0.0,    0.0,
  13    6.7,   31.1,   31.8,  -42.6,    16.6,    14    6.7,   32.1,   30.2,  -44.3,   11.9,
  15    6.7,   32.1,   27.7,  -44.6,     6.8,    16    9.8,  196.8,  119.8,   19.4,  101.0,
  17    6.7,   29.2,   20.3,  -41.3,    -3.8,    18    6.7,   28.4,   18.5,  -38.6,   -9.7,
  19    6.7,   30.7,   22.8,  -38.7,   -14.7,    20    6.7,   32.0,   26.4,  -37.7,  -19.3,
  21    5.5,   27.2,   32.4,  -44.2,     5.2,    22    5.5,   30.4,   31.0,  -44.0,    0.3,
  23    5.5,   32.6,   28.6,  -42.5,    -4.5,    24    5.5,   33.9,   25.4,  -39.7,   -9.3,
  25    5.5,   34.2,   21.4,  -35.7,   -13.7,    26    5.5,   33.4,   16.7,  -30.6,  -17.8,
  27    0.0,    0.0,    0.0,    0.0,     0.0,    28    9.8,   92.4,  207.6, -226.8,   18.8,
  29    9.8,  117.1,  205.0, -227.0,    -5.6,    30    9.8,  138.2,  196.3, -220.3,  -29.9,
  31    9.8,  158.6,  182.7, -208.1,   -51.6,    32    9.8,  176.8,  166.2, -190.7,  -70.4,
  33    9.8,  189.7,  145.2, -167.5,   -87.0,    34    9.8,  196.8,  119.8, -139.2, -101.0,
  35    0.0,    0.0,    0.0,    0.0,     0.0,    36    0.0,    0.0,    0.0,    0.0,    0.0,


SOURCE ID: S2
```

IFV	BH	BW	BL	XADJ	YADJ	IFV	BH	BW	BL	XADJ	YADJ
1	4.3,	61.7,	44.3,	-3.9,	21.3,	2	4.3,	61.8,	52.6,	-11.7,	25.7,
3	6.7,	32.4,	29.2,	10.9,	15.5,	4	0.0,	0.0,	0.0,	0.0,	0.0,
5	0.0,	0.0,	0.0,	0.0,	0.0,	6	0.0,	0.0,	0.0,	0.0,	0.0,
7	0.0,	0.0,	0.0,	0.0,	0.0,	8	0.0,	0.0,	0.0,	0.0,	0.0,
9	0.0,	0.0,	0.0,	0.0,	0.0,	10	4.3,	37.4,	38.5,	-52.1,	14.8,
11	4.3,	41.1,	42.9,	-56.6,	8.8,	12	4.3,	43.6,	46.0,	-59.4,	2.5,
13	4.3,	44.8,	47.7,	-60.4,	-3.8,	14	6.7,	32.1,	30.2,	-38.5,	19.0,
15	6.7,	32.1,	27.7,	-40.2,	14.8,	16	6.7,	31.1,	24.4,	-40.6,	10.1,
17	6.7,	29.2,	20.3,	-39.8,	5.2,	18	6.7,	28.4,	18.5,	-38.7,	-0.6,
19	6.7,	30.7,	22.8,	-40.4,	-5.8,	20	6.7,	32.0,	26.4,	-40.9,	-10.8,
21	6.7,	32.4,	29.2,	-40.1,	-15.5,	22	5.5,	30.4,	31.0,	-49.9,	7.2,
23	5.5,	32.6,	28.6,	-49.5,	1.2,	24	5.5,	33.9,	25.4,	-47.6,	-4.8,
25	5.5,	34.2,	21.4,	-44.3,	-10.7,	26	5.5,	33.4,	16.7,	-39.6,	-16.3,
27	0.0,	0.0,	0.0,	0.0,	0.0,	28	9.8,	92.4,	207.6,	-235.8,	17.2,
29	9.8,	117.1,	205.0,	-235.5,	-8.8,	30	9.8,	138.2,	196.3,	-228.2,	-34.6,
31	9.8,	158.6,	182.7,	-215.0,	-57.5,	32	9.8,	176.8,	166.2,	-196.5,	-77.4,
33	9.8,	189.7,	145.2,	-172.0,	-95.0,	34	4.3,	40.1,	44.1,	8.4,	21.4,
35	4.3,	64.0,	40.2,	6.3,	12.2,	36	4.3,	59.7,	35.0,	4.1,	16.2,

*** AERMOD - VERSION 19191 *** *** Plant 621 City of Santa Clara *** 02/25/20
*** AERMET - VERSION 18081 *** *** *** 12:33:23
PAGE 6

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL NODRYDPLT NOWETDPLT URBAN ADJ_U*

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

(591798.2,	4136024.7,	14.7,	14.7,	1.5);	(591818.2,	4136024.7,	15.1,	15.1,	1.5);
(591838.2,	4136024.7,	15.0,	15.0,	1.5);	(591858.2,	4136024.7,	15.0,	15.0,	1.5);
(591878.2,	4136024.7,	14.9,	14.9,	1.5);	(591898.2,	4136024.7,	14.9,	14.9,	1.5);
(591918.2,	4136024.7,	15.0,	15.0,	1.5);	(591938.2,	4136024.7,	14.9,	14.9,	1.5);
(591958.2,	4136024.7,	14.8,	14.8,	1.5);	(591978.2,	4136024.7,	14.9,	14.9,	1.5);
(591998.2,	4136024.7,	14.8,	14.8,	1.5);	(592018.2,	4136024.7,	14.7,	14.7,	1.5);
(592038.2,	4136024.7,	14.8,	14.8,	1.5);	(592058.2,	4136024.7,	15.0,	15.0,	1.5);
(592078.2,	4136024.7,	14.9,	14.9,	1.5);	(592098.2,	4136024.7,	15.0,	15.0,	1.5);
(591798.2,	4136044.7,	14.8,	14.8,	1.5);	(591818.2,	4136044.7,	15.1,	15.1,	1.5);
(591838.2,	4136044.7,	15.1,	15.1,	1.5);	(591858.2,	4136044.7,	15.1,	15.1,	1.5);
(591878.2,	4136044.7,	14.9,	14.9,	1.5);	(591898.2,	4136044.7,	15.0,	15.0,	1.5);
(591918.2,	4136044.7,	15.0,	15.0,	1.5);	(591938.2,	4136044.7,	14.8,	14.8,	1.5);
(591958.2,	4136044.7,	14.7,	14.7,	1.5);	(591978.2,	4136044.7,	14.8,	14.8,	1.5);
(591998.2,	4136044.7,	14.6,	14.6,	1.5);	(592018.2,	4136044.7,	14.3,	14.3,	1.5);
(592038.2,	4136044.7,	14.3,	14.3,	1.5);	(592058.2,	4136044.7,	14.9,	14.9,	1.5);
(592078.2,	4136044.7,	15.0,	15.0,	1.5);	(592098.2,	4136044.7,	15.0,	15.0,	1.5);
(591798.2,	4136064.7,	14.7,	14.7,	1.5);	(591818.2,	4136064.7,	15.1,	15.1,	1.5);
(591838.2,	4136064.7,	15.1,	15.1,	1.5);	(591858.2,	4136064.7,	15.1,	15.1,	1.5);
(591878.2,	4136064.7,	14.9,	14.9,	1.5);	(591898.2,	4136064.7,	14.8,	14.8,	1.5);
(591918.2,	4136064.7,	15.0,	15.0,	1.5);	(591938.2,	4136064.7,	14.8,	14.8,	1.5);
(591958.2,	4136064.7,	14.6,	14.6,	1.5);	(591978.2,	4136064.7,	14.8,	14.8,	1.5);

```
   ( 591998.2, 4136064.7,      14.6,      14.6,       1.5);        ( 592018.2, 4136064.7,      14.2,      14.2,       1.5);
   ( 592038.2, 4136064.7,      14.3,      14.3,       1.5);        ( 592058.2, 4136064.7,      14.9,      14.9,       1.5);
   ( 592078.2, 4136064.7,      15.0,      15.0,       1.5);        ( 592098.2, 4136064.7,      14.6,      14.6,       1.5);
   ( 591798.2, 4136084.7,      14.6,      14.6,       1.5);        ( 591818.2, 4136084.7,      15.0,      15.0,       1.5);
   ( 591838.2, 4136084.7,      14.9,      14.9,       1.5);        ( 591858.2, 4136084.7,      14.8,      14.8,       1.5);
   ( 591878.2, 4136084.7,      14.8,      14.8,       1.5);        ( 591898.2, 4136084.7,      15.0,      15.0,       1.5);
   ( 591918.2, 4136084.7,      15.0,      15.0,       1.5);        ( 591938.2, 4136084.7,      14.9,      14.9,       1.5);
   ( 591958.2, 4136084.7,      14.7,      14.7,       1.5);        ( 591978.2, 4136084.7,      14.8,      14.8,       1.5);
   ( 591998.2, 4136084.7,      14.9,      14.9,       1.5);        ( 592018.2, 4136084.7,      14.7,      14.7,       1.5);
   ( 592038.2, 4136084.7,      14.7,      14.7,       1.5);        ( 592058.2, 4136084.7,      15.0,      15.0,       1.5);
   ( 592078.2, 4136084.7,      15.0,      15.0,       1.5);        ( 592098.2, 4136084.7,      14.7,      14.7,       1.5);
   ( 591798.2, 4136104.7,      14.6,      14.6,       1.5);        ( 591818.2, 4136104.7,      14.8,      14.8,       1.5);
   ( 591838.2, 4136104.7,      15.0,      15.0,       1.5);        ( 591858.2, 4136104.7,      14.9,      14.9,       1.5);
   ( 591878.2, 4136104.7,      14.7,      14.7,       1.5);        ( 591898.2, 4136104.7,      14.8,      14.8,       1.5);
   ( 591918.2, 4136104.7,      15.0,      15.0,       1.5);        ( 591938.2, 4136104.7,      15.0,      15.0,       1.5);
   ( 591958.2, 4136104.7,      14.8,      14.8,       1.5);        ( 591978.2, 4136104.7,      14.8,      14.8,       1.5);
   ( 591998.2, 4136104.7,      14.8,      14.8,       1.5);        ( 592018.2, 4136104.7,      14.8,      14.8,       1.5);
   ( 592038.2, 4136104.7,      14.8,      14.8,       1.5);        ( 592058.2, 4136104.7,      15.0,      15.0,       1.5);
   ( 592078.2, 4136104.7,      14.9,      14.9,       1.5);        ( 592098.2, 4136104.7,      14.8,      14.8,       1.5);
   ( 591798.2, 4136124.7,      14.6,      14.6,       1.5);        ( 591818.2, 4136124.7,      15.0,      15.0,       1.5);
   ( 591838.2, 4136124.7,      15.0,      15.0,       1.5);        ( 591858.2, 4136124.7,      15.0,      15.0,       1.5);
   ( 591878.2, 4136124.7,      14.7,      14.7,       1.5);        ( 591898.2, 4136124.7,      14.6,      14.6,       1.5);
   ( 591918.2, 4136124.7,      14.8,      14.8,       1.5);        ( 591938.2, 4136124.7,      14.9,      14.9,       1.5);
   ( 591958.2, 4136124.7,      14.7,      14.7,       1.5);        ( 591978.2, 4136124.7,      14.5,      14.5,       1.5);


 *** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                  ***        02/25/20
 *** AERMET - VERSION  18081 ***   ***                                                                ***        12:33:23
                                                                                                                 PAGE  13
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*

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

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

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


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

                                                1.54,   3.09,   5.14,   8.23,  10.80,
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*** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                  ***        02/25/20
*** AERMET - VERSION  18081 ***   ***                                                                ***        12:33:23
                                                                                                               PAGE  14

*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*

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

  Surface file:   KSJC_2013_2017.SFC                                                  Met Version:  18081
  Profile file:   KSJC_2013_2017.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:    23293                 Upper air station no.:    23230
                Name: N Y. MINETA SN JO INTL APT, CA            Name: UNKNOWN
                Year:   2013                                    Year:   2013

 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
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 13 01 01   1 01  -17.4  0.169 -9.000 -9.000 -999.  167.     31.4  0.02   2.57   1.00    2.62  136.    7.9  277.0    2.0
 13 01 01   1 02  -12.5  0.137 -9.000 -9.000 -999.  122.     20.8  0.02   2.57   1.00    2.16  129.    7.9  277.0    2.0
 13 01 01   1 03   -4.1  0.080 -9.000 -9.000 -999.   55.     11.3  0.05   2.57   1.00    1.14  227.    7.9  276.4    2.0
 13 01 01   1 04   -6.8  0.103 -9.000 -9.000 -999.   80.     14.8  0.05   2.57   1.00    1.43  102.    7.9  276.4    2.0
 13 01 01   1 05  -10.0  0.126 -9.000 -9.000 -999.  108.     18.3  0.05   2.57   1.00    1.72   79.    7.9  277.0    2.0
 13 01 01   1 06   -6.3  0.096 -9.000 -9.000 -999.   71.     12.8  0.02   2.57   1.00    1.55  153.    7.9  277.5    2.0
 13 01 01   1 07   -2.4  0.062 -9.000 -9.000 -999.   37.      9.0  0.02   2.57   1.00    0.92  171.    7.9  277.5    2.0
 13 01 01   1 08   -7.0  0.105 -9.000 -9.000 -999.   82.     15.0  0.05   2.57   0.74    1.45    6.    7.9  277.5    2.0
 13 01 01   1 09   -0.3  0.039 -9.000 -9.000 -999.   21.     19.3  0.02   2.57   0.39    0.62  119.    7.9  279.2    2.0
 13 01 01   1 10   65.7  0.147  0.659  0.005  159.  135.     -4.4  0.05   2.57   0.27    1.37  228.    7.9  280.9    2.0
 13 01 01   1 11  118.0  0.197  1.211  0.006  550.  209.     -5.9  0.05   2.57   0.23    1.91  208.    7.9  281.4    2.0
 13 01 01   1 12  147.9  0.180  1.536  0.008  894.  184.     -3.6  0.05   2.57   0.21    1.64  225.    7.9  283.1    2.0
 13 01 01   1 13  152.7  0.150  1.579  0.007  941.  139.     -2.0  0.02   2.57   0.21    1.54  302.    7.9  283.8    2.0
 13 01 01   1 14  132.9  0.201  1.528  0.006  980.  216.     -5.6  0.05   2.57   0.22    1.94  277.    7.9  284.9    2.0
 13 01 01   1 15   89.1  0.138  1.349  0.005 1005.  124.     -2.7  0.02   2.57   0.25    1.48  308.    7.9  285.4    2.0
 13 01 01   1 16   25.1  0.174  0.887  0.005 1012.  174.    -19.0  0.05   2.57   0.33    1.86   10.    7.9  285.4    2.0
 13 01 01   1 17  -18.7  0.221 -9.000 -9.000 -999.  249.     53.5  0.05   2.57   0.57    2.89   12.    7.9  283.8    2.0
 13 01 01   1 18  -15.5  0.159 -9.000 -9.000 -999.  153.     27.9  0.05   2.57   1.00    2.13  353.    7.9  282.5    2.0
 13 01 01   1 19  -18.6  0.183 -9.000 -9.000 -999.  188.     36.9  0.05   2.57   1.00    2.50  225.    7.9  280.9    2.0
 13 01 01   1 20   -4.1  0.078 -9.000 -9.000 -999.   59.     10.5  0.02   2.57   1.00    1.26  136.    7.9  280.4    2.0
 13 01 01   1 21  -11.8  0.133 -9.000 -9.000 -999.  117.     19.6  0.02   2.57   1.00    2.10  125.    7.9  278.8    2.0
 13 01 01   1 22   -7.6  0.106 -9.000 -9.000 -999.   83.     14.3  0.02   2.57   1.00    1.70  110.    7.9  277.5    2.0
 13 01 01   1 23   -6.2  0.095 -9.000 -9.000 -999.   71.     12.7  0.02   2.57   1.00    1.54  146.    7.9  277.0    2.0
 13 01 01   1 24  -15.2  0.152 -9.000 -9.000 -999.  142.     25.4  0.02   2.57   1.00    2.37  130.    7.9  277.0    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 13 01 01 01    7.9 1  136.    2.62   277.1   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
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*** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                  ***        02/25/20
*** AERMET - VERSION  18081 ***   ***                                                                ***        12:33:23
                                                                                                              PAGE  15
*** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*

                          *** THE PERIOD ( 43824 HRS) AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: S1       ***
                              INCLUDING SOURCE(S):     S1          ,

                                        *** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

      X-COORD (M)   Y-COORD (M)        CONC                      X-COORD (M)   Y-COORD (M)        CONC
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
        591798.16    4136024.66       0.07238                    591818.16    4136024.66       0.07270
        591838.16    4136024.66       0.07325                    591858.16    4136024.66       0.07378
        591878.16    4136024.66       0.07436                    591898.16    4136024.66       0.07493
        591918.16    4136024.66       0.07541                    591938.16    4136024.66       0.07603
        591958.16    4136024.66       0.07659                    591978.16    4136024.66       0.07713
        591998.16    4136024.66       0.07777                    592018.16    4136024.66       0.07840
        592038.16    4136024.66       0.07899                    592058.16    4136024.66       0.07953
        592078.16    4136024.66       0.08023                    592098.16    4136024.66       0.08088
        591798.16    4136044.66       0.07475                    591818.16    4136044.66       0.07514
        591838.16    4136044.66       0.07574                    591858.16    4136044.66       0.07632
        591878.16    4136044.66       0.07699                    591898.16    4136044.66       0.07757
        591918.16    4136044.66       0.07818                    591938.16    4136044.66       0.07889
        591958.16    4136044.66       0.07959                    591978.16    4136044.66       0.08017
        591998.16    4136044.66       0.08090                    592018.16    4136044.66       0.08174
        592038.16    4136044.66       0.08241                    592058.16    4136044.66       0.08283
        592078.16    4136044.66       0.08353                    592098.16    4136044.66       0.08432
        591798.16    4136064.66       0.07736                    591818.16    4136064.66       0.07770
        591838.16    4136064.66       0.07836                    591858.16    4136064.66       0.07900
        591878.16    4136064.66       0.07975                    591898.16    4136064.66       0.08052
        591918.16    4136064.66       0.08108                    591938.16    4136064.66       0.08188
        591958.16    4136064.66       0.08268                    591978.16    4136064.66       0.08328
        591998.16    4136064.66       0.08410                    592018.16    4136064.66       0.08506
        592038.16    4136064.66       0.08579                    592058.16    4136064.66       0.08630
        592078.16    4136064.66       0.08707                    592098.16    4136064.66       0.08813
        591798.16    4136084.66       0.08005                    591818.16    4136084.66       0.08048
        591838.16    4136084.66       0.08122                    591858.16    4136084.66       0.08199
        591878.16    4136084.66       0.08273                    591898.16    4136084.66       0.08334
        591918.16    4136084.66       0.08407                    591938.16    4136084.66       0.08491
        591958.16    4136084.66       0.08580                    591978.16    4136084.66       0.08655
        591998.16    4136084.66       0.08732                    592018.16    4136084.66       0.08827
        592038.16    4136084.66       0.08914                    592058.16    4136084.66       0.08988
        592078.16    4136084.66       0.09080                    592098.16    4136084.66       0.09189
        591798.16    4136104.66       0.08278                    591818.16    4136104.66       0.08342
        591838.16    4136104.66       0.08406                    591858.16    4136104.66       0.08490
        591878.16    4136104.66       0.08585                    591898.16    4136104.66       0.08658
        591918.16    4136104.66       0.08725                    591938.16    4136104.66       0.08811
        591958.16    4136104.66       0.08909                    591978.16    4136104.66       0.08999
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        591998.16    4136104.66        0.09087                    592018.16    4136104.66        0.09180
        592038.16    4136104.66        0.09274                    592058.16    4136104.66        0.09366
        592078.16    4136104.66        0.09471                    592098.16    4136104.66        0.09586


 *** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                  ***        02/25/20
 *** AERMET - VERSION  18081 ***   ***                                                                ***        12:33:23
                                                                                                               PAGE  47
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*

                                  *** THE SUMMARY OF MAXIMUM PERIOD ( 43824 HRS) RESULTS ***


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

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

S1         1ST HIGHEST VALUE IS       0.14812 AT (  592098.16,  4136324.66,    14.03,    14.03,    1.50)  DC
           2ND HIGHEST VALUE IS       0.14606 AT (  592078.16,  4136324.66,    14.08,    14.08,    1.50)  DC
           3RD HIGHEST VALUE IS       0.14428 AT (  592058.16,  4136324.66,    13.83,    13.83,    1.50)  DC
           4TH HIGHEST VALUE IS       0.14314 AT (  592098.16,  4136304.66,    14.15,    14.15,    1.50)  DC
           5TH HIGHEST VALUE IS       0.14215 AT (  592038.16,  4136324.66,    14.05,    14.05,    1.50)  DC
           6TH HIGHEST VALUE IS       0.14122 AT (  592078.16,  4136304.66,    14.08,    14.08,    1.50)  DC
           7TH HIGHEST VALUE IS       0.14024 AT (  592018.16,  4136324.66,    14.05,    14.05,    1.50)  DC
           8TH HIGHEST VALUE IS       0.13921 AT (  592058.16,  4136304.66,    14.17,    14.17,    1.50)  DC
           9TH HIGHEST VALUE IS       0.13860 AT (  591998.16,  4136324.66,    13.77,    13.77,    1.50)  DC
          10TH HIGHEST VALUE IS       0.13823 AT (  592098.16,  4136284.66,    14.11,    14.11,    1.50)  DC

S2         1ST HIGHEST VALUE IS       0.20677 AT (  592098.16,  4136324.66,    14.03,    14.03,    1.50)  DC
           2ND HIGHEST VALUE IS       0.20357 AT (  592078.16,  4136324.66,    14.08,    14.08,    1.50)  DC
           3RD HIGHEST VALUE IS       0.20103 AT (  592058.16,  4136324.66,    13.83,    13.83,    1.50)  DC
           4TH HIGHEST VALUE IS       0.19963 AT (  592098.16,  4136304.66,    14.15,    14.15,    1.50)  DC
           5TH HIGHEST VALUE IS       0.19746 AT (  592038.16,  4136324.66,    14.05,    14.05,    1.50)  DC
           6TH HIGHEST VALUE IS       0.19675 AT (  592078.16,  4136304.66,    14.08,    14.08,    1.50)  DC
           7TH HIGHEST VALUE IS       0.19437 AT (  592018.16,  4136324.66,    14.05,    14.05,    1.50)  DC
           8TH HIGHEST VALUE IS       0.19358 AT (  592058.16,  4136304.66,    14.17,    14.17,    1.50)  DC
           9TH HIGHEST VALUE IS       0.19273 AT (  592098.16,  4136284.66,    14.11,    14.11,    1.50)  DC
          10TH HIGHEST VALUE IS       0.19202 AT (  591998.16,  4136324.66,    13.77,    13.77,    1.50)  DC


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

 *** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                  ***        02/25/20
 *** AERMET - VERSION  18081 ***   ***                                                                ***        12:33:23
                                                                                                               PAGE  48
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*
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                                                *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***

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

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

S1       HIGH   1ST HIGH VALUE IS       4.09634  ON 16010422: AT (  592098.16,  4136264.66,    14.04,    14.04,    1.50)  DC

S2       HIGH   1ST HIGH VALUE IS       4.64575  ON 14120224: AT (  592098.16,  4136284.66,    14.11,    14.11,    1.50)  DC


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

 *** AERMOD - VERSION  19191 ***   *** Plant 621 City of Santa Clara                                          ***        02/25/20
 *** AERMET - VERSION  18081 ***   ***                                                                        ***        12:33:23
                                                                                                                         PAGE  49
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  NODRYDPLT  NOWETDPLT  URBAN  ADJ_U*

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

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

 A Total of           0 Fatal Error Message(s)
 A Total of           4 Warning Message(s)
 A Total of         930 Informational Message(s)

 A Total of       43824 Hours Were Processed

 A Total of         530 Calm Hours Identified

 A Total of         400 Missing Hours Identified (  0.91 Percent)


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

    ********   WARNING MESSAGES   ********
 ME W186     715       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used          0.50
 ME W187     715       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
 CN W305       5       WAKFLG: Stack height > or = EPA formula height for SRCID:           S1
 CN W305       5       WAKFLG: Stack height > or = EPA formula height for SRCID:           S2

    ************************************
    *** AERMOD Finishes Successfully ***
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10. Appendix B – HARP2 Output: Health Risk Tables

Worker Cancer

*HARP - HRACalc v19044 6/8/2020 10:23:24 AM - Cancer Risk - Input File: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\June2020Plant621\hra\WorkerHRAInput.hra

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK	SOIL_RISK	DERMAL_I	MMILK_RI	WATER_RI	FISH_RISK	CROP_RIS	BEEF_RISK	DAIRY_RIS	PIG_RISK	CHICKEN_	EGG_RISK
573	ALL		593645.6	4135704	**4.07E-08**	25YrCance	3.72E-08	2.41E-09	1.02E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v19044 6/8/2020 10:23:24 AM - Cancer Risk - Input File: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\June2020Plant621\hra\WorkerHRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBREV	RISK_SUM	SCENARIO	%	INH_RISK	SOIL_RISK	DERMAL_I	MMILK_RI	WATER_RI	FISH_RISK	CROP_RIS	BEEF_RISK	DAIRY_RIS	PIG_RISK	CHICKEN_	EGG_RISK	1ST_DRIVI	2ND_DRIV
573	ALL		593645.6	4135704	0.004515	75070	Acetaldehyde	2.54E-09	25YrCance	6%	2.54E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
573	ALL		593645.6	4135704	0.000624	107028	Acrolein	0.00E+00	25YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
573	ALL		593645.6	4135704	7.45E-07	7440382	Arsenic	2.27E-09	25YrCance	6%	3.72E-10	1.36E-09	5.43E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	SOIL	DERMAL
573	ALL		593645.6	4135704	0.000196	71432	Benzene	1.10E-09	25YrCance	3%	1.10E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
573	ALL		593645.6	4135704	1.62E-06	7440417	Beryllium	7.66E-10	25YrCance	2%	7.66E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
573	ALL		593645.6	4135704	2.04E-06	106990	1,3-Butadiene	6.89E-11	25YrCance	0%	6.89E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
573	ALL		593645.6	4135704	6.34E-06	7440439	Cadmium	5.35E-09	25YrCance	13%	5.35E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
573	ALL		593645.6	4135704	6.20E-07	18540299	Cr(VI)	1.82E-08	25YrCance	45%	1.78E-08	3.77E-10	2.61E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATI	SOIL
573	ALL		593645.6	4135704	5.93E-05	7440508	Copper	0.00E+00	25YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
573	ALL		593645.6	4135704	0.000592	100414	Ethyl Benzene	2.90E-10	25YrCance	1%	2.90E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
573	ALL		593645.6	4135704	0.00644	50000	Formaldehyde	7.61E-09	25YrCance	19%	7.61E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
573	ALL		593645.6	4135704	0.008573	110543	Hexane	0.00E+00	25YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
573	ALL		593645.6	4135704	1.78E-05	7439921	Lead	2.45E-10	25YrCance	1%	4.20E-11	1.84E-10	1.91E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	SOIL	INHALATIC
573	ALL		593645.6	4135704	4.95E-05	7439965	Manganese	0.00E+00	25YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
573	ALL		593645.6	4135704	4.95E-05	7439976	Mercury	0.00E+00	25YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
573	ALL		593645.6	4135704	5.49E-05	91203	Naphthalene	3.71E-10	25YrCance	1%	3.71E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
573	ALL		593645.6	4135704	6.34E-06	7440020	Nickel	3.25E-10	25YrCance	1%	3.25E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
573	ALL		593645.6	4135704	7.16E-07	1151	PAHs-w/o	1.04E-09	25YrCance	3%	1.16E-10	4.95E-10	4.29E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	SOIL	DERMAL
573	ALL		593645.6	4135704	0.025508	115071	Propylene	0.00E+00	25YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
573	ALL		593645.6	4135704	0.000656	75569	Propylene Oxide	4.80E-10	25YrCance	1%	4.80E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION	
573	ALL		593645.6	4135704	1.26E-05	7782492	Selenium	0.00E+00	25YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
573	ALL		593645.6	4135704	0.002347	108883	Toluene	0.00E+00	25YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
573	ALL		593645.6	4135704	0.000864	1330207	Xylenes	0.00E+00	25YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		
								4.07E-08		100%														

Worker Chronic HI

*HARP - HRACalc v19044 6/8/2020 10:23:24 AM - Chronic Risk - Input File: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\June2020Plant621\hra\WorkerHRAInput.hra

REC	GRP	NETID	X	Y	SCENARIO	CV	**CNS**	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	SKIN	EYE	BONE/TEE	ENDO	BLOOD	ODOR	GENERAL	MAXHI
573	ALL		593645.6	4135704	NonCance	1.42E-03	5.47E-03	2.32E-04	3.86E-03	1.98E-05	4.91E-03	4.99E-03	1.41E-03	1.23E-06	0.00E+00	2.96E-07	5.18E-04	0.00E+00	0.00E+00	5.47E-03

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REC	GRP	NETID	X	Y	CONC	POLID	POLABBREV	SCENARIO	CV	**CNS**	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	SKIN	EYE	BONE/TEE	ENDO	BLOOD	ODOR	GENERAL	%	INH_CON
573	ALL		593645.6	4135704	0.004515	75070	Acetaldehyde	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.22E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%	4.51E-03
573	ALL		593645.6	4135704	0.000624	107028	Acrolein	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.78E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%	6.24E-04
573	ALL		593645.6	4135704	7.45E-07	7440382	Arsenic	NonCance	1.41E-03	1.41E-03	0.00E+00	0.00E+00	0.00E+00	1.41E-03	1.41E-03	1.41E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	26%	7.45E-07
573	ALL		593645.6	4135704	0.000196	71432	Benzene	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.53E-05	0.00E+00	0.00E+00	0%	1.96E-04
573	ALL		593645.6	4135704	1.62E-06	7440417	Beryllium	NonCance	0.00E+00	0.00E+00	2.32E-04	0.00E+00	4.60E-06	0.00E+00	2.32E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%	1.62E-06
573	ALL		593645.6	4135704	2.04E-06	106990	1,3-Butadiene	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%	2.04E-06
573	ALL		593645.6	4135704	6.34E-06	7440439	Cadmium	NonCance	0.00E+00	0.00E+00	0.00E+00	3.81E-04	0.00E+00	0.00E+00	3.17E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%	6.34E-06
573	ALL		593645.6	4135704	6.20E-07	18540299	Cr(VI)	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.10E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E-07	0.00E+00	0.00E+00	0%	6.20E-07
573	ALL		593645.6	4135704	5.93E-05	7440508	Copper	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%	5.93E-05
573	ALL		593645.6	4135704	0.000592	100414	Ethyl Benzene	NonCance	0.00E+00	0.00E+00	0.00E+00	2.96E-07	2.96E-07	2.96E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.96E-07	0.00E+00	0.00E+00	0.00E+00	0%	5.93E-04
573	ALL		593645.6	4135704	0.00644	50000	Formaldehyde	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.16E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%	6.44E-03
573	ALL		593645.6	4135704	0.008573	110543	Hexane	NonCance	0.00E+00	1.22E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%	8.57E-03
573	ALL		593645.6	4135704	1.78E-05	7439921	Lead	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%	1.78E-05
573	ALL		593645.6	4135704	4.95E-05	7439965	Manganese	NonCance	0.00E+00	5.51E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	10%	4.96E-05
573	ALL		593645.6	4135704	4.95E-05	7439976	Mercury	NonCance	0.00E+00	3.48E-03	0.00E+00	3.48E-03	0.00E+00	3.48E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	64%	4.96E-05
573	ALL		593645.6	4135704	5.49E-05	91203	Naphthalene	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.10E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%	5.49E-05
573	ALL		593645.6	4135704	6.34E-06	7440020	Nickel	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.14E-06	4.53E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.53E-04	0.00E+00	0.00E+00	0%	6.34E-06
573	ALL		593645.6	4135704	7.16E-07	1151	PAHs-w/o	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%	7.16E-07
573	ALL		593645.6	4135704	0.025508	115071	Propylene	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.50E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%	2.55E-02
573	ALL		593645.6	4135704	0.000656	75569	Propylene Oxide	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.19E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%	6.56E-04
573	ALL		593645.6	4135704	1.26E-05	7782492	Selenium	NonCance	1.49E-05	1.49E-05	0.00E+00	0.00E+00	1.49E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%	1.26E-05
573	ALL		593645.6	4135704	0.002347	108883	Toluene	NonCance	0.00E+00	7.82E-06	0.00E+00	0.00E+00	0.00E+00	7.82E-06	7.82E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%	2.35E-03
573	ALL		593645.6	4135704	0.000864	1330207	Xylenes	NonCance	0.00E+00	1.23E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.23E-06	0.00E+00	1.23E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%	8.64E-04
										5.47E-03													100%	

Acute PMI

*HARP - HRACalc v19044 6/8/2020 10:23:24 AM - Acute Risk - Input File: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\June2020Plant621\hra\WorkerHRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBREV	SCENARIO	CV	**CNS**	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	SKIN	**EYE**	BONE/TEE	ENDO	BLOOD	ODOR	GENERAL		%
2646	ALL		593756.2	4135770	0.083831	75070	Acetaldehyde	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.78E-04	0.00E+00	**1.78E-04**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		2%
2646	ALL		593756.2	4135770	0.01162	107028	Acrolein	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.65E-03	0.00E+00	**4.65E-03**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		53%
2646	ALL		593756.2	4135770	1.39E-05	7440382	Arsenic	NonCance	6.93E-05	6.93E-05	0.00E+00	0.00E+00	0.00E+00	6.93E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	0.005544	71432	Benzene	NonCance	0.00E+00	0.00E+00	2.05E-04	0.00E+00	0.00E+00	2.05E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.05E-04	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	3.01E-05	7440417	Beryllium	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	3.80E-05	106990	1,3-Butadiene	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.76E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	0.000118	7440439	Cadmium	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	1.15E-05	18540299	Cr(VI)	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	0.001104	7440508	Copper	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.10E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	0.011039	100414	Ethyl Benzene	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	0.219124	50000	Formaldehyde	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**3.98E-03**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		45%
2646	ALL		593756.2	4135770	0.159363	110543	Hexane	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	0.00033	7439921	Lead	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	0.000921	7439965	Manganese	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	0.000921	7439976	Mercury	NonCance	0.00E+00	1.54E-03	0.00E+00	0.00E+00	0.00E+00	1.54E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	0.001021	91203	Naphthalene	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	0.000118	7440020	Nickel	NonCance	0.00E+00	0.00E+00	5.89E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	1.33E-05	1151	PAHs-w/o	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	0.473108	115071	Propylene	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	0.012201	75569	Propylene Oxide	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.94E-06	3.94E-06	0.00E+00	3.94E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	0.000233	7782492	Selenium	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	0.043659	108883	Toluene	NonCance	0.00E+00	1.18E-06	0.00E+00	0.00E+00	0.00E+00	1.18E-06	1.18E-06	0.00E+00	1.18E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
2646	ALL		593756.2	4135770	0.016019	1330207	Xylenes	NonCance	0.00E+00	7.28E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.28E-07	0.00E+00	7.28E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0%
																	8.82E-03							100%

Resident Cancer

*HARP - HRACalc v19044 6/8/2020 10:18:46 AM - Cancer Risk - Input File: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\June2020Plant621\hra\ResHRAInput.hra

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK	SOIL_RISK	DERMAL_R	MMILK_RI	WATER_RI	FISH_RISK	CROP_RIS	BEEF_RISK	DAIRY_RIS	PIG_RISK	CHICKEN_	EGG_RISK
498	ALL		593025.6	4135684	1.71E-08	30YrCance	1.49E-08	1.89E-09	1.01E-10	1.98E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v19044 6/8/2020 10:18:46 AM - Cancer Risk - Input File: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\June2020Plant621\hra\ResHRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBREV	RISK_SUM	SCENARIO	%	INH_RISK	SOIL_RISK	DERMAL_R	MMILK_RI	WATER_RI	FISH_RISK	CROP_RIS	BEEF_RISK	DAIRY_RIS	PIG_RISK	CHICKEN_	EGG_RISK	1ST_DRIVE
498	ALL		593025.6	4135684	0.000149	75070	Acetaldehyde	1.01E-09	30YrCance	6%	1.01E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
498	ALL		593025.6	4135684	2.06E-05	107028	Acrolein	0.00E+00	30YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
498	ALL		593025.6	4135684	2.47E-08	7440382	Arsenic	1.32E-09	30YrCance	8%	2.00E-10	1.06E-09	5.19E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	SOIL
498	ALL		593025.6	4135684	6.47E-06	71432	Benzene	4.38E-10	30YrCance	3%	4.38E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
498	ALL		593025.6	4135684	5.36E-08	7440417	Beryllium	3.05E-10	30YrCance	2%	3.05E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
498	ALL		593025.6	4135684	6.75E-08	106990	1,3-Butadiene	2.74E-11	30YrCance	0%	2.74E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
498	ALL		593025.6	4135684	2.10E-07	7440439	Cadmium	2.13E-09	30YrCance	12%	2.13E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
498	ALL		593025.6	4135684	2.05E-08	18540299	Cr(VI)	7.38E-09	30YrCance	43%	7.08E-09	2.95E-10	4.79E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATI(
498	ALL		593025.6	4135684	1.96E-06	7440508	Copper	0.00E+00	30YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
498	ALL		593025.6	4135684	1.96E-05	100414	Ethyl Benzene	1.15E-10	30YrCance	1%	1.15E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
498	ALL		593025.6	4135684	0.000213	50000	Formaldehyde	3.03E-09	30YrCance	18%	3.03E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
498	ALL		593025.6	4135684	0.000284	110543	Hexane	0.00E+00	30YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
498	ALL		593025.6	4135684	5.88E-07	7439921	Lead	1.66E-10	30YrCance	1%	1.67E-11	1.44E-10	3.50E-12	1.73E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	SOIL
498	ALL		593025.6	4135684	1.64E-06	7439965	Manganese	0.00E+00	30YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
498	ALL		593025.6	4135684	1.64E-06	7439976	Mercury	0.00E+00	30YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
498	ALL		593025.6	4135684	1.82E-06	91203	Naphthalene	1.47E-10	30YrCance	1%	1.47E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
498	ALL		593025.6	4135684	2.10E-07	7440020	Nickel	1.29E-10	30YrCance	1%	1.29E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
498	ALL		593025.6	4135684	2.37E-08	1151	PAHs-w/o	6.69E-10	30YrCance	4%	4.41E-11	3.88E-10	4.09E-11	1.96E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	SOIL
498	ALL		593025.6	4135684	0.000844	115071	Propylene	0.00E+00	30YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
498	ALL		593025.6	4135684	2.17E-05	75569	Propylene Oxide	1.91E-10	30YrCance	1%	1.91E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
498	ALL		593025.6	4135684	4.15E-07	7782492	Selenium	0.00E+00	30YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
498	ALL		593025.6	4135684	7.76E-05	108883	Toluene	0.00E+00	30YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
498	ALL		593025.6	4135684	2.86E-05	1330207	Xylenes	0.00E+00	30YrCance	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
								1.71E-08		100%													

Res Chronic HI

*HARP - HRACalc v19044 6/8/2020 10:18:46 AM - Chronic Risk - Input File: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\June2020Plant621\hra\ResHRAInput.hra

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	SKIN	EYE	BONE/TEE	ENDO	BLOOD	ODOR	GENERAL	MAXHI
498	ALL		593025.6	4135684	NonCance	7.38E-05	**2.47E-04**	7.66E-06	1.69E-04	1.08E-06	2.28E-04	1.91E-04	7.29E-05	4.08E-08	0.00E+00	9.80E-09	1.71E-05	0.00E+00	0.00E+00	2.47E-04

*HARP - HRACalc v19044 6/8/2020 10:18:46 AM - Chronic Risk - Input File: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\June2020Plant621\hra\ResHRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBREV	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	SKIN	EYE	BONE/TEE	ENDO	BLOOD	ODOR	GENERAL	%
498	ALL		593025.6	4135684	0.000149	75070	Acetaldehyde	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	2.06E-05	107028	Acrolein	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.90E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	2.47E-08	7440382	Arsenic	NonCance	7.29E-05	7.29E-05	0.00E+00	0.00E+00	0.00E+00	7.29E-05	7.29E-05	7.29E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	30%
498	ALL		593025.6	4135684	6.47E-06	71432	Benzene	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.16E-06	0.00E+00	0%
498	ALL		593025.6	4135684	5.36E-08	7440417	Beryllium	NonCance	0.00E+00	0.00E+00	7.66E-06	0.00E+00	2.57E-07	0.00E+00	7.66E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	6.75E-08	106990	1,3-Butadiene	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.38E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	2.10E-07	7440439	Cadmium	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.43E-05	0.00E+00	0.00E+00	1.05E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	2.05E-08	18540299	Cr(VI)	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.64E-09	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	1.96E-06	7440508	Copper	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	1.96E-05	100414	Ethyl Benzene	NonCance	0.00E+00	0.00E+00	0.00E+00	9.80E-09	9.80E-09	9.80E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.80E-09	0.00E+00	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	0.000213	50000	Formaldehyde	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.37E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	0.000284	110543	Hexane	NonCance	0.00E+00	4.05E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	5.88E-07	7439921	Lead	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	1.64E-06	7439965	Manganese	NonCance	0.00E+00	1.82E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7%
498	ALL		593025.6	4135684	1.64E-06	7439976	Mercury	NonCance	0.00E+00	1.55E-04	0.00E+00	1.55E-04	0.00E+00	1.55E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	63%
498	ALL		593025.6	4135684	1.82E-06	91203	Naphthalene	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.02E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	2.10E-07	7440020	Nickel	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.79E-07	1.50E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E-05	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	2.37E-08	1151	PAHs-w/o	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	0.000844	115071	Propylene	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.81E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	2.17E-05	75569	Propylene Oxide	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.24E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	4.15E-07	7782492	Selenium	NonCance	8.16E-07	8.16E-07	0.00E+00	0.00E+00	8.16E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	7.76E-05	108883	Toluene	NonCance	0.00E+00	2.59E-07	0.00E+00	0.00E+00	0.00E+00	2.59E-07	2.59E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
498	ALL		593025.6	4135684	2.86E-05	1330207	Xylenes	NonCance	0.00E+00	4.08E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.08E-08	0.00E+00	4.08E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
										2.47E-04													100%

Student Cancer

*HARP - HRACalc v19044 6/8/2020 7:49:09 PM - Cancer Risk - Input File: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\School\hra\StudentHRAInput.hra

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK	SOIL_RISK	DERMAL_I	MMILK_RI	WATER_RI	FISH_RISK	CROP_RIS	BEEF_RISK	DAIRY_RIS	PIG_RISK	CHICKEN_	EGG_RISK
580	ALL		592161.1	4135201	**2.80E-09**	9YrCancer	2.67E-09	7.45E-11	2.32E-11	3.77E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

*HARP - HRACalc v19044 6/8/2020 7:49:09 PM - Cancer Risk - Input File: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\School\hra\StudentHRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBREV	RISK_SUM	SCENARIO	%	INH_RISK	SOIL_RISK	DERMAL_I	MMILK_RI	WATER_RI	FISH_RISK	CROP_RIS	BEEF_RISK	DAIRY_RIS	PIG_RISK	CHICKEN_	EGG_RISK	1ST_DRIVE
580	ALL		592161.1	4135201	5.38E-05	75070	Acetaldehyde	1.81E-10	9YrCancer	6%	1.81E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	7.43E-06	107028	Acrolein	0.00E+00	9YrCancer	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	8.88E-09	7440382	Arsenic	8.97E-11	9YrCancer	3%	3.58E-11	4.19E-11	1.19E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	2.32E-06	71432	Benzene	7.79E-11	9YrCancer	3%	7.79E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	1.93E-08	7440417	Beryllium	5.46E-11	9YrCancer	2%	5.46E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	2.43E-08	106990	1,3-Butadiene	4.91E-12	9YrCancer	0%	4.91E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	7.55E-08	7440439	Cadmium	3.81E-10	9YrCancer	14%	3.81E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	7.39E-09	18540299	Cr(VI)	1.28E-09	9YrCancer	46%	1.27E-09	1.16E-11	1.10E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	7.07E-07	7440508	Copper	0.00E+00	9YrCancer	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	7.06E-06	100414	Ethyl Benzene	2.07E-11	9YrCancer	1%	2.07E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	7.72E-05	50000	Formaldehyde	5.45E-10	9YrCancer	19%	5.45E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	0.000102	110543	Hexane	0.00E+00	9YrCancer	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	2.12E-07	7439921	Lead	9.93E-12	9YrCancer	0%	2.99E-12	5.67E-12	8.03E-13	4.72E-13	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	5.90E-07	7439965	Manganese	0.00E+00	9YrCancer	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	5.90E-07	7439976	Mercury	0.00E+00	9YrCancer	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	6.54E-07	91203	Naphthalene	2.64E-11	9YrCancer	1%	2.64E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	7.55E-08	7440020	Nickel	2.31E-11	9YrCancer	1%	2.31E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	8.53E-09	1151	PAHs-w/o	7.31E-11	9YrCancer	3%	1.12E-11	1.53E-11	9.38E-12	3.72E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	0.000304	115071	Propylene	0.00E+00	9YrCancer	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	7.82E-06	75569	Propylene Oxide	3.42E-11	9YrCancer	1%	3.42E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	1.50E-07	7782492	Selenium	0.00E+00	9YrCancer	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	2.80E-05	108883	Toluene	0.00E+00	9YrCancer	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
580	ALL		592161.1	4135201	1.03E-05	1330207	Xylenes	0.00E+00	9YrCancer	0%	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA
								2.80E-09		100%													

Student Chronic HI

*HARP - HRACalc v19044 6/8/2020 7:49:09 PM - Chronic Risk - Input File: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\School\hra\StudentHRAInput.hra

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	SKIN	EYE	BONE/TEE	ENDO	BLOOD	ODOR	GENERAL	MAXHI
580	ALL		592161.1	4135201	NonCance	2.66E-05	**8.89E-05**	2.76E-06	6.08E-05	3.90E-07	8.21E-05	6.90E-05	2.63E-05	1.47E-08	0.00E+00	3.53E-09	6.17E-06	0.00E+00	0.00E+00	8.89E-05

*HARP - HRACalc v19044 6/8/2020 7:49:09 PM - Chronic Risk - Input File: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\School\hra\StudentHRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBREV	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	SKIN	EYE	BONE/TEE	ENDO	BLOOD	ODOR	GENERAL	%
580	ALL		592161.1	4135201	5.38E-05	75070	Acetaldehyde	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.84E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
580	ALL		592161.1	4135201	7.43E-06	107028	Acrolein	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.12E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
580	ALL		592161.1	4135201	8.88E-09	7440382	Arsenic	NonCance	2.63E-05	2.63E-05	0.00E+00	0.00E+00	0.00E+00	2.63E-05	2.63E-05	2.63E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	30%
580	ALL		592161.1	4135201	2.32E-06	71432	Benzene	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.72E-07	0.00E+00	0%
580	ALL		592161.1	4135201	1.93E-08	7440417	Beryllium	NonCance	0.00E+00	0.00E+00	2.76E-06	0.00E+00	9.25E-08	0.00E+00	2.76E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
580	ALL		592161.1	4135201	2.43E-08	106990	1,3-Butadiene	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.22E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
580	ALL		592161.1	4135201	7.55E-08	7440439	Cadmium	NonCance	0.00E+00	0.00E+00	0.00E+00	5.15E-06	0.00E+00	0.00E+00	3.78E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
580	ALL		592161.1	4135201	7.39E-09	18540299	Cr(VI)	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.69E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.47E-09	0.00E+00	0%
580	ALL		592161.1	4135201	7.07E-07	7440508	Copper	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
580	ALL		592161.1	4135201	7.06E-06	100414	Ethyl Benzene	NonCance	0.00E+00	0.00E+00	0.00E+00	3.53E-09	3.53E-09	3.53E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.53E-09	0.00E+00	0.00E+00	0%
580	ALL		592161.1	4135201	7.72E-05	50000	Formaldehyde	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.58E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
580	ALL		592161.1	4135201	0.000102	110543	Hexane	NonCance	0.00E+00	1.46E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
580	ALL		592161.1	4135201	2.12E-07	7439921	Lead	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
580	ALL		592161.1	4135201	5.90E-07	7439965	Manganese	NonCance	0.00E+00	6.56E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7%
580	ALL		592161.1	4135201	5.90E-07	7439976	Mercury	NonCance	0.00E+00	5.57E-05	0.00E+00	5.57E-05	0.00E+00	5.57E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	63%
580	ALL		592161.1	4135201	6.54E-07	91203	Naphthalene	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.27E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
580	ALL		592161.1	4135201	7.55E-08	7440020	Nickel	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.45E-08	5.40E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.40E-06	0.00E+00	0%
580	ALL		592161.1	4135201	8.53E-09	1151	PAHs-w/o	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
580	ALL		592161.1	4135201	0.000304	115071	Propylene	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
580	ALL		592161.1	4135201	7.82E-06	75569	Propylene Oxide	NonCance	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.61E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
580	ALL		592161.1	4135201	1.50E-07	7782492	Selenium	NonCance	2.94E-07	2.94E-07	0.00E+00	0.00E+00	2.94E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
580	ALL		592161.1	4135201	2.80E-05	108883	Toluene	NonCance	0.00E+00	9.32E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.32E-08	9.32E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
580	ALL		592161.1	4135201	1.03E-05	1330207	Xylenes	NonCance	0.00E+00	1.47E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E-08	0.00E+00	1.47E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0%
										8.89E-05													100%

Worker Cancer

*HARP - HRACalc v19044 6/9/2020 4:59:44 PM - Cancer Risk by Receptor and Source - Input File: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\June2020Plant621\hra\S1.573WorkerHRAInput.hra

SRC	REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK	SOIL_RISK	DERMAL_F	MMILK_RI	WATER_RI	FISH_RISK	CROP_RIS	BEEF_RISK	DAIRY_RIS	PIG_RISK	CHICKEN_	EGG_RISK
S1	573	ALL		593645.6	4135704	1.99E-08	25YrCance	1.82E-08	1.20E-09	5.06E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
S2	573	ALL		593645.6	4135704	2.08E-08	25YrCance	1.91E-08	1.21E-09	5.12E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
						4.07E-08													

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*HARP - HRACalc v19044 6/9/2020 4:59:44 PM - Cancer Risk - Input File: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\June2020Plant621\hra\S1.573WorkerHRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBRE	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_F	MMILK_RI	WATER_RI	FISH_RISK	CROP_RIS	BEEF_RISK	DAIRY_RIS	PIG_RISK	CHICKEN_	EGG_RISK	1ST_DRIVE
573	ALL		593645.6	4135704	0.002244	75070	Acetaldeh	1.26E-09	25YrCance	*	1.26E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	0.00031	107028	Acrolein	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
573	ALL		593645.6	4135704	3.70E-07	7440382	Arsenic	1.13E-09	25YrCance	*	1.85E-10	6.75E-10	2.70E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	SOIL
573	ALL		593645.6	4135704	0.000111	71432	Benzene	6.25E-10	25YrCance	*	6.25E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	8.07E-07	7440417	Beryllium	3.81E-10	25YrCance	*	3.81E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	1.01E-06	106990	1,3-Butadi	3.43E-11	25YrCance	*	3.43E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	3.15E-06	7440439	Cadmium	2.66E-09	25YrCance	*	2.66E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	3.08E-07	18540299	Cr(VI)	9.04E-09	25YrCance	*	8.84E-09	1.87E-10	1.30E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	2.95E-05	7440508	Copper	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
573	ALL		593645.6	4135704	0.000294	100414	Ethyl Benz	1.44E-10	25YrCance	*	1.44E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	0.002848	50000	Formaldel	3.36E-09	25YrCance	*	3.36E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	0.004266	110543	Hexane	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
573	ALL		593645.6	4135704	8.84E-06	7439921	Lead	1.22E-10	25YrCance	*	2.09E-11	9.13E-11	9.50E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	SOIL
573	ALL		593645.6	4135704	2.46E-05	7439965	Manganes	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
573	ALL		593645.6	4135704	2.46E-05	7439976	Mercury	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
573	ALL		593645.6	4135704	2.73E-05	91203	Naphthale	1.84E-10	25YrCance	*	1.84E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	3.15E-06	7440020	Nickel	1.61E-10	25YrCance	*	1.61E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	3.56E-07	1151	PAHs-w/o	5.17E-10	25YrCance	*	5.77E-11	2.46E-10	2.13E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	SOIL
573	ALL		593645.6	4135704	0.012682	115071	Propylene	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
573	ALL		593645.6	4135704	0.000326	75569	Propylene	2.39E-10	25YrCance	*	2.39E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	6.23E-06	7782492	Selenium	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
573	ALL		593645.6	4135704	0.001168	108883	Toluene	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
573	ALL		593645.6	4135704	0.00043	1330207	Xylenes	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
								1.99E-08											

S-2

*HARP - HRACalc v19044 6/9/2020 4:59:49 PM - Cancer Risk - Input File: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\June2020Plant621\hra\S2.573WorkerHRAInput.hra

REC	GRP	NETID	X	Y	CONC	POLID	POLABBRE	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_F	MMILK_RI	WATER_RI	FISH_RISK	CROP_RIS	BEEF_RISK	DAIRY_RIS	PIG_RISK	CHICKEN_	EGG_RISK	1ST_DRIVE
573	ALL		593645.6	4135704	0.002271	75070	Acetaldeh	1.28E-09	25YrCance	*	1.28E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	0.000314	107028	Acrolein	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
573	ALL		593645.6	4135704	3.75E-07	7440382	Arsenic	1.14E-09	25YrCance	*	1.87E-10	6.83E-10	2.73E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	SOIL
573	ALL		593645.6	4135704	8.49E-05	71432	Benzene	4.78E-10	25YrCance	*	4.78E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	8.15E-07	7440417	Beryllium	3.85E-10	25YrCance	*	3.85E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	1.03E-06	106990	1,3-Butadi	3.47E-11	25YrCance	*	3.47E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	3.19E-06	7440439	Cadmium	2.69E-09	25YrCance	*	2.69E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	3.12E-07	18540299	Cr(VI)	9.15E-09	25YrCance	*	8.95E-09	1.90E-10	1.31E-11	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	2.99E-05	7440508	Copper	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
573	ALL		593645.6	4135704	0.000298	100414	Ethyl Benz	1.46E-10	25YrCance	*	1.46E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	0.003592	50000	Formaldel	4.24E-09	25YrCance	*	4.24E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	0.004307	110543	Hexane	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
573	ALL		593645.6	4135704	8.93E-06	7439921	Lead	1.23E-10	25YrCance	*	2.11E-11	9.22E-11	9.59E-12	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	SOIL
573	ALL		593645.6	4135704	2.49E-05	7439965	Manganes	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
573	ALL		593645.6	4135704	2.49E-05	7439976	Mercury	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
573	ALL		593645.6	4135704	2.76E-05	91203	Naphthale	1.86E-10	25YrCance	*	1.86E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	3.19E-06	7440020	Nickel	1.63E-10	25YrCance	*	1.63E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	3.60E-07	1151	PAHs-w/o	5.23E-10	25YrCance	*	5.84E-11	2.49E-10	2.16E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	SOIL
573	ALL		593645.6	4135704	0.012826	115071	Propylene	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
573	ALL		593645.6	4135704	0.00033	75569	Propylene	2.41E-10	25YrCance	*	2.41E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATIC
573	ALL		593645.6	4135704	6.33E-06	7782492	Selenium	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
573	ALL		593645.6	4135704	0.001179	108883	Toluene	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
573	ALL		593645.6	4135704	0.000433	1330207	Xylenes	0.00E+00	25YrCance	*	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
								2.08E-08											

Worker Chronic HI

*HARP - HRACalc v19044 6/9/2020 5:08:50 PM - Chronic Risk by Receptor and Source - Input File: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\June2020Plant621\hra\S1.573WorkerHRAInput.hra

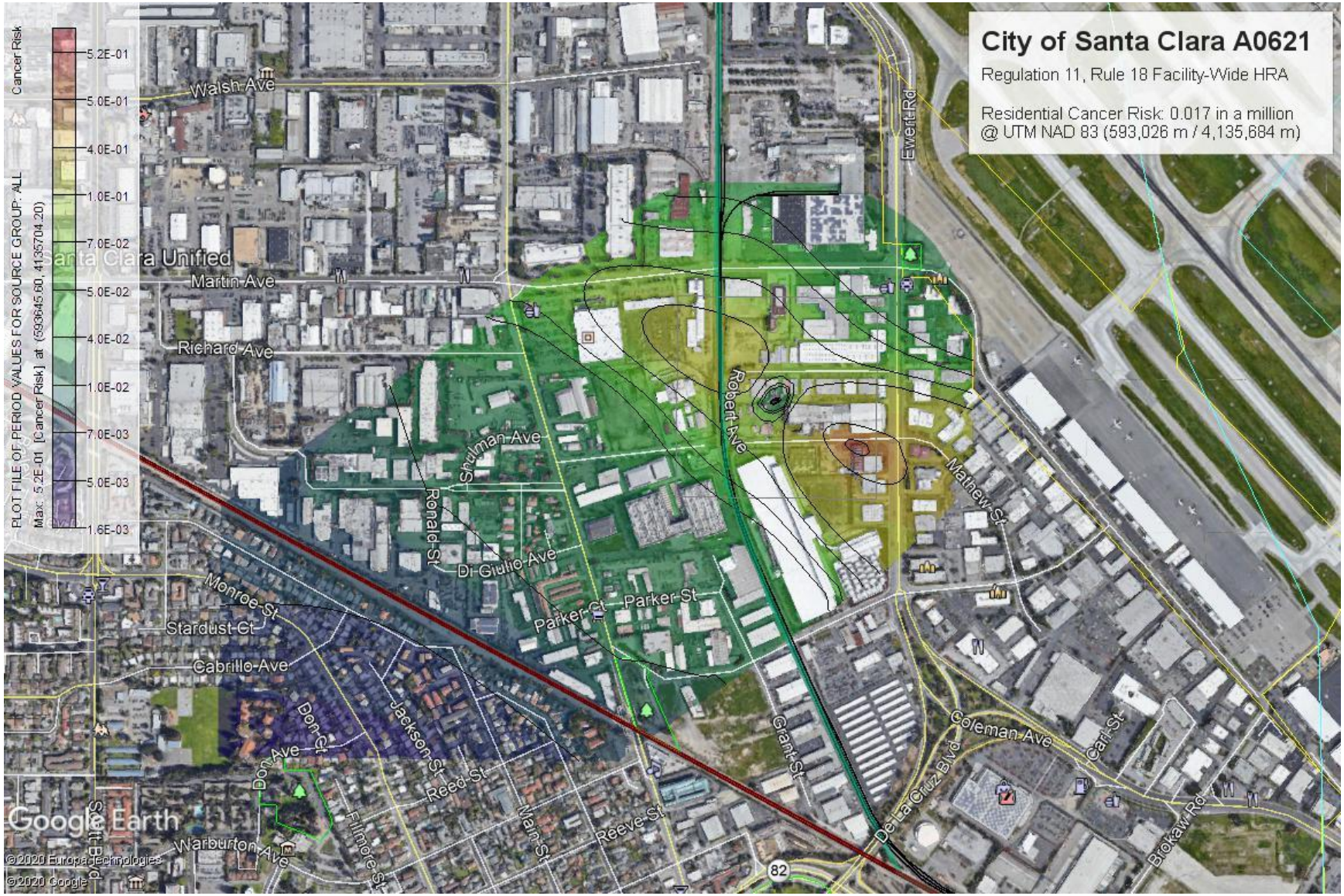
SRC	REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	SKIN	EYE	BONE/TEE	ENDO	BLOOD	ODOR	GENERAL	MAXHI
S1	573	ALL		593645.6	4135704	NonCance	7.08E-04	2.72E-03	1.15E-04	1.92E-03	9.82E-06	2.44E-03	2.44E-03	7.01E-04	6.15E-07	0.00E+00	1.47E-07	2.62E-04	0.00E+00	0.00E+00	2.72E-03
S2	573	ALL		593645.6	4135704	NonCance	7.16E-04	2.75E-03	1.16E-04	1.94E-03	9.96E-06	2.47E-03	2.55E-03	7.09E-04	6.19E-07	0.00E+00	1.49E-07	2.56E-04	0.00E+00	0.00E+00	2.75E-03
								5.47E-03													

PMI Acute

*HARP - HRACalc v19044 6/9/2020 5:13:58 PM - Acute Risk by Receptor and Source - Input File: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\June2020Plant621\hra\S1.2646PMIHRAInput.hra

SRC	REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	SKIN	EYE	BONE/TEE	ENDO	BLOOD	ODOR	GENERAL	MAXHI
S1	2646	ALL		593756.2	4135770	NonCance	4.63E-05	1.07E-03	5.31E-04	0.00E+00	0.00E+00	1.21E-03	3.23E-03	0.00E+00	5.89E-03	0.00E+00	0.00E+00	1.37E-04	0.00E+00	0.00E+00	5.89E-03
S2	2646	ALL		593756.2	4135770	NonCance	2.30E-05	5.34E-04	2.64E-04	0.00E+00	0.00E+00	6.03E-04	1.61E-03	0.00E+00	2.93E-03	0.00E+00	0.00E+00	6.82E-05	0.00E+00	0.00E+00	2.93E-03
															8.82E-03						

11. Appendix C – Health Risk Maps


City of Santa Clara A0621
Regulation 11, Rule 18 Facility-Wide HRA
Residential Cancer Risk: 0.017 in a million
@ UTM NAD 83 (593,026 m / 4,135,684 m)
Cancer Risk
5.2E-01
5.0E-01
4.0E-01
1.0E-01
7.0E-02
5.0E-02
4.0E-02
1.0E-02
7.0E-03
5.0E-03
1.6E-03
PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL
Max: 5.2E-01 [Cancer Risk] at (593645.60, 4135704.20)
Walsh Ave
Martin Ave
Richard Ave
Shulman Ave
Ronald St
Di Giulio Ave
Robert Ave
Ewert Rd
Mathew St
Parker Ct
Parker St
Monroe St
Stardust Ct
Cabrillo Ave
Don Ct
Don Ave
Jackson St
Reed St
Main St
Reeve St
Grant St
Coleman Ave
Carl St
De La Cruz Blvd
Brokaw Rd
Warburton Ave
Fillmore St
Lafayette St
82
Google Earth
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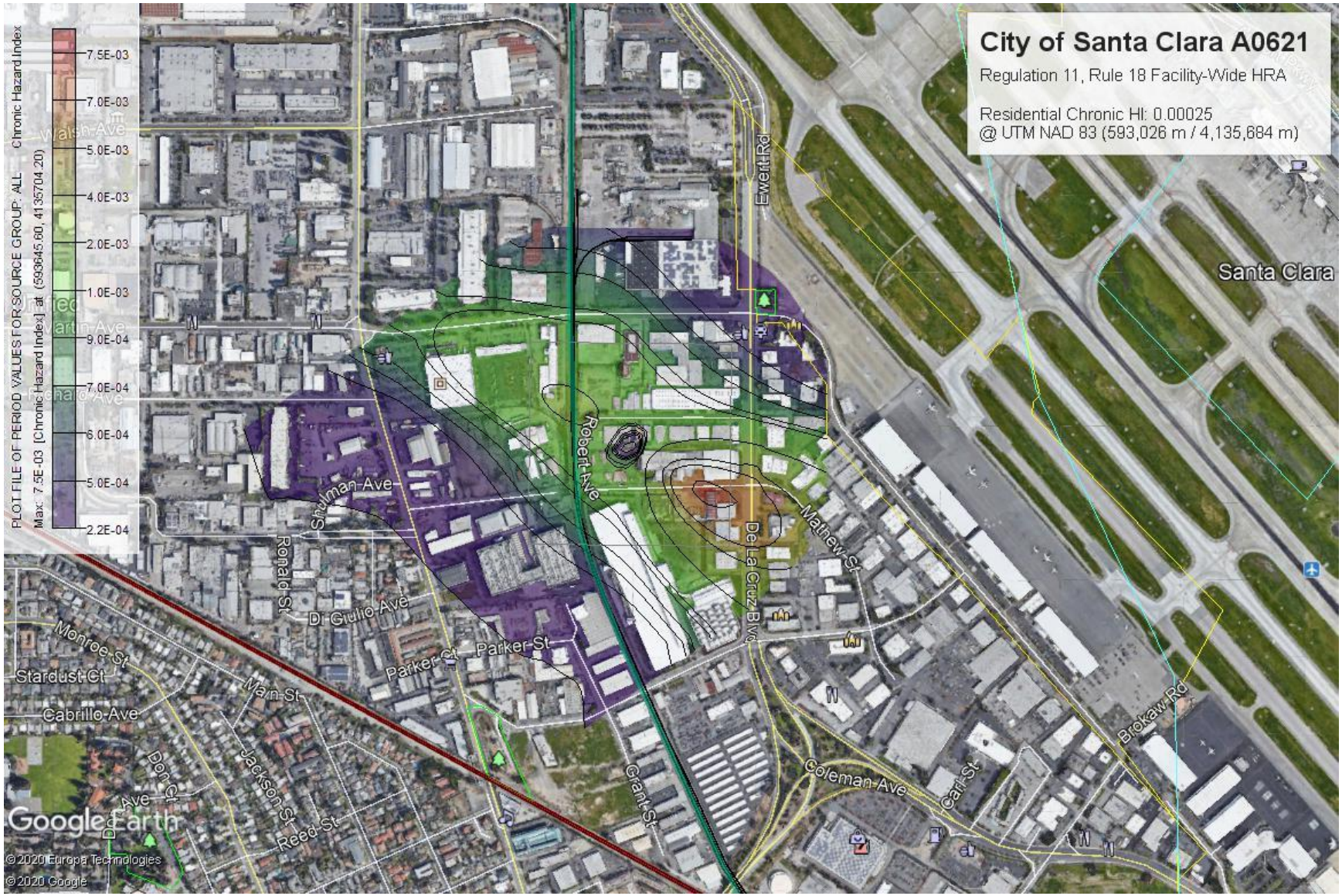
City of Santa Clara A0621
Regulation 11, Rule 18 Facility-Wide HRA
Residential Chronic HI: 0.00025
@ UTM NAD 83 (593,026 m / 4,135,684 m)
PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL Chronic Hazard Index
Max: 7.5E-03 [Chronic Hazard Index] at (593645.60, 4135704.20)
7.5E-03
7.0E-03
5.0E-03
4.0E-03
2.0E-03
1.0E-03
9.0E-04
7.0E-04
6.0E-04
5.0E-04
2.2E-04
Santa Clara
Ewert Rd
Robert Ave
Shulman Ave
Ronald St
Di Giulio Ave
Parker Ct
Parker St
De La Cruz Blvd
Mathew St
Monroe St
Stardust Ct
Cabrillo Ave
Main St
Jackson St
Reed St
Grant St
Coleman Ave
Carl St
Brokaw Rd
Google Earth
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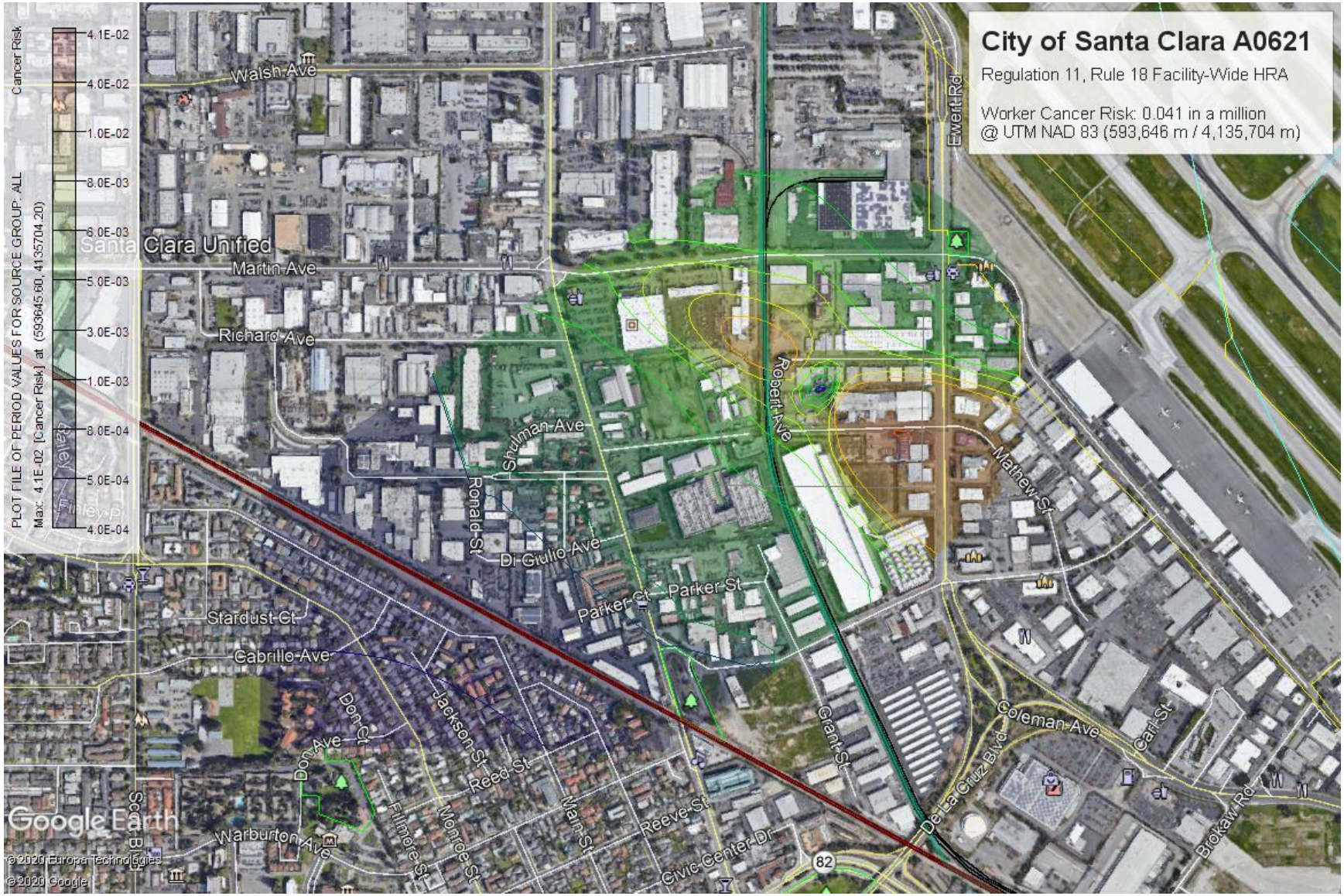
City of Santa Clara A0621
Regulation 11, Rule 18 Facility-Wide HRA
Worker Cancer Risk: 0.041 in a million
@ UTM NAD 83 (593,646 m / 4,135,704 m)
Cancer Risk
4.1E-02
4.0E-02
1.0E-02
8.0E-03
6.0E-03
5.0E-03
3.0E-03
1.0E-03
8.0E-04
5.0E-04
4.0E-04
PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL
Max: 4.1E-02 [Cancer Risk] at (593645.60, 4135704.20)
Walsh Ave
Martin Ave
Richard Ave
Shirlman Ave
Ronald St
Di Giulio Ave
Parker Ct
Parker St
Stardust Ct
Cabrillo Ave
Don Ct
Don Ave
Jackson St
Reed St
Fillmore St
Monroe St
Main St
Reeve St
Civic Center Dr
Narburton Ave
Grant St
Robert Ave
Ewert Rd
Mathew St
Coleman Ave
Carl St
De La Cruz Blvd
Brokaw Rd
82
Google Earth
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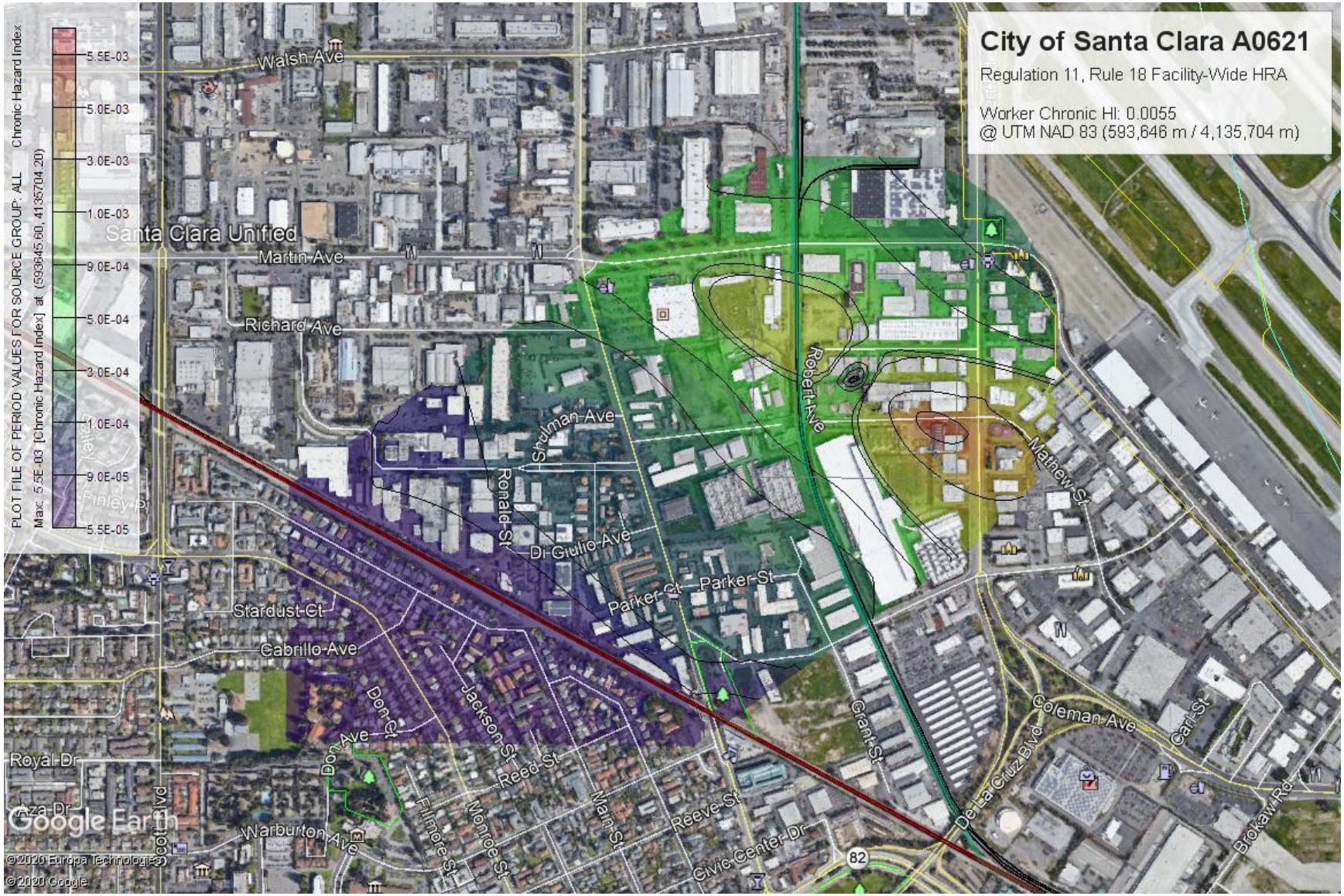
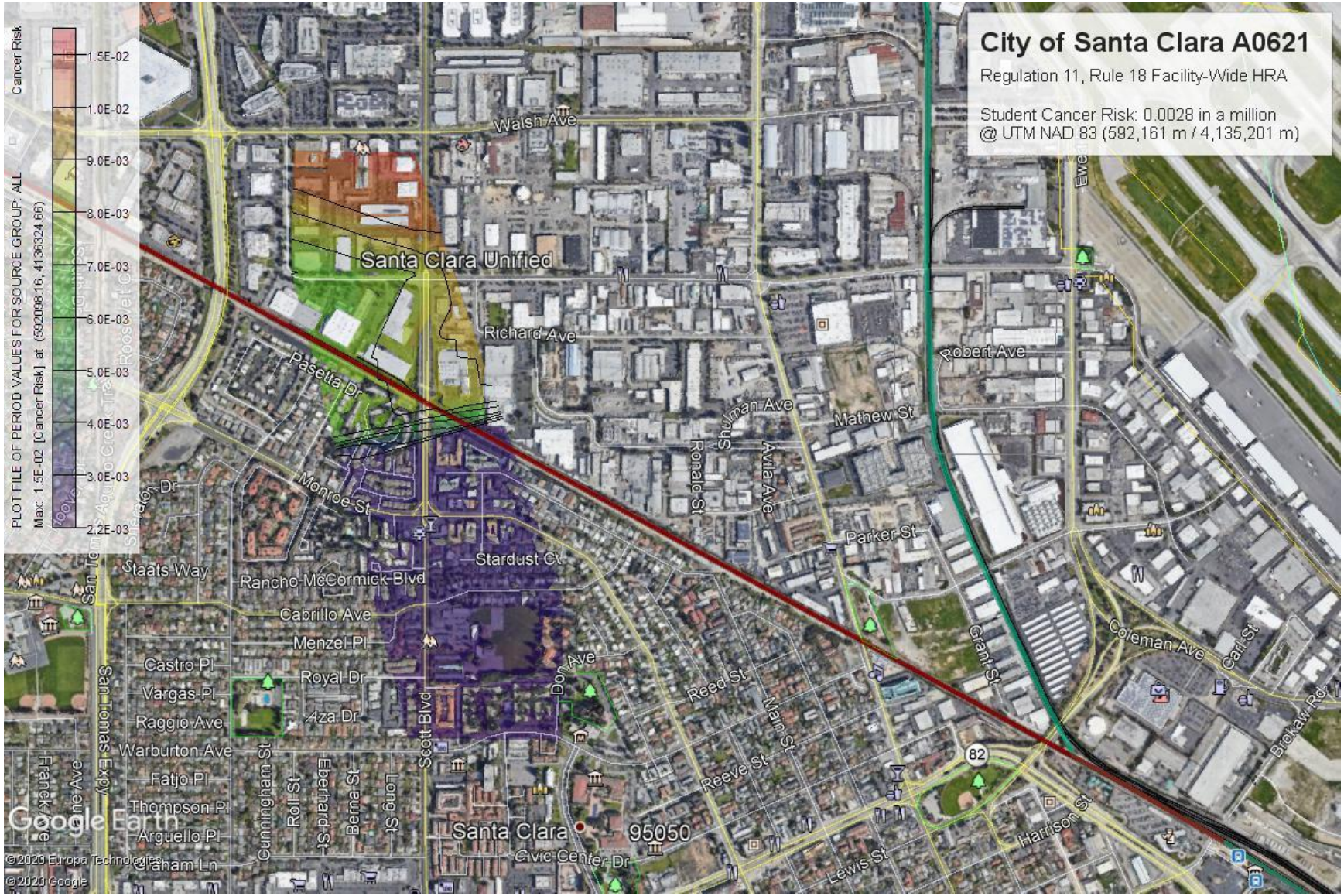

City of Santa Clara A0621
Regulation 11, Rule 18 Facility-Wide HRA
Worker Chronic HI: 0.0055
@ UTM NAD 83 (593,646 m / 4,135,704 m)
PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL Chronic Hazard Index
Max: 5.5E-03 [Chronic Hazard Index] at (593645.60, 4135704.20)
5.5E-03
5.0E-03
3.0E-03
1.0E-03
9.0E-04
5.0E-04
3.0E-04
1.0E-04
9.0E-05
5.5E-05
Walsh Ave
Santa Clara Unified
Martin Ave
Richard Ave
Shulman Ave
Ronald St
Di Giulio Ave
Parker Ct
Parker St
Robert Ave
Mathew St
Stardust Ct
Cabrillo Ave
Don Ct
Don Ave
Jackson St
Reed St
Royal Dr
Plaza Dr
Scott Blvd
Warburton Ave
Filmore St
Monroe St
Main St
Reeve St
Civic Center Dr
Grant St
De La Cruz Blvd
Coleman Ave
Carl St
Brokaw Rd
82
Google Earth
© 2020 Europa Technologies
© 2020 Google


City of Santa Clara A0621
Regulation 11, Rule 18 Facility-Wide HRA
Student Cancer Risk: 0.0028 in a million
@ UTM NAD 83 (592,161 m / 4,135,201 m)
Cancer Risk
1.5E-02
1.0E-02
9.0E-03
8.0E-03
7.0E-03
6.0E-03
5.0E-03
4.0E-03
3.0E-03
2.2E-03
PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL
Max: 1.5E-02 [Cancer Risk] at (592096.16, 4136324.66)
Walsh Ave
Santa Clara Unified
Richard Ave
Robert Ave
Pasetta Dr
Shuman Ave
Mathew St
Ronald St
Avila Ave
Monroe St
Parker St
Stardust Ct
Staats Way
Rancho McCormick Blvd
Cabrillo Ave
Menzel Pl
Castro Pl
Vargas Pl
Raggio Ave
Warburton Ave
Fatjo Pl
Thompson Pl
Arguello Pl
Graham Ln
Royal Dr
Aza Dr
Scott Blvd
Don Ave
Reed St
Main St
Reeve St
Grant St
Coleman Ave
Carl St
Brokaw Rd
Harrison St
Lewis St
Civic Center Dr
Santa Clara 95050
San Tomas Expy
Cunningham St
Roll St
Bernal St
Berna St
Long St
Google Earth
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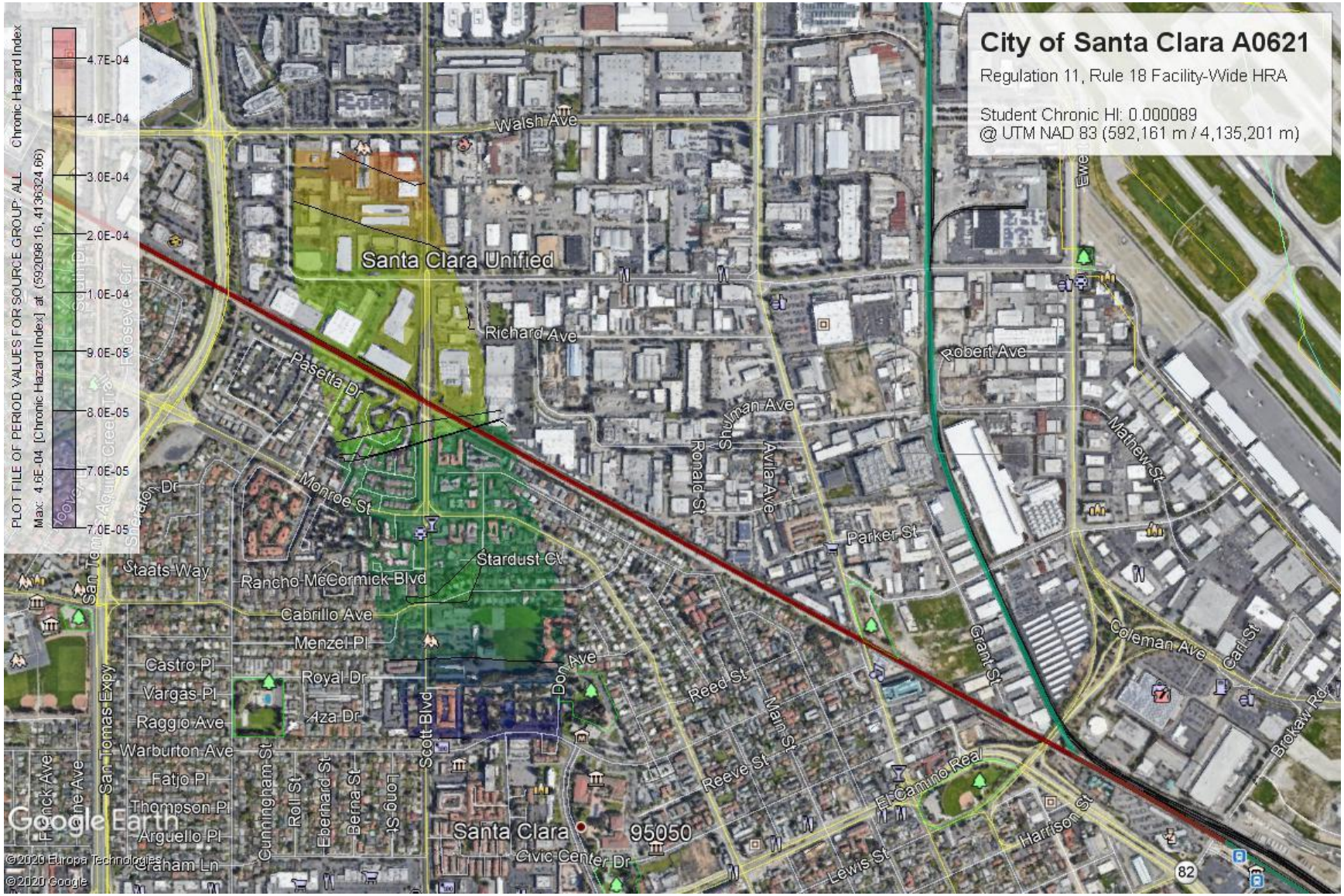
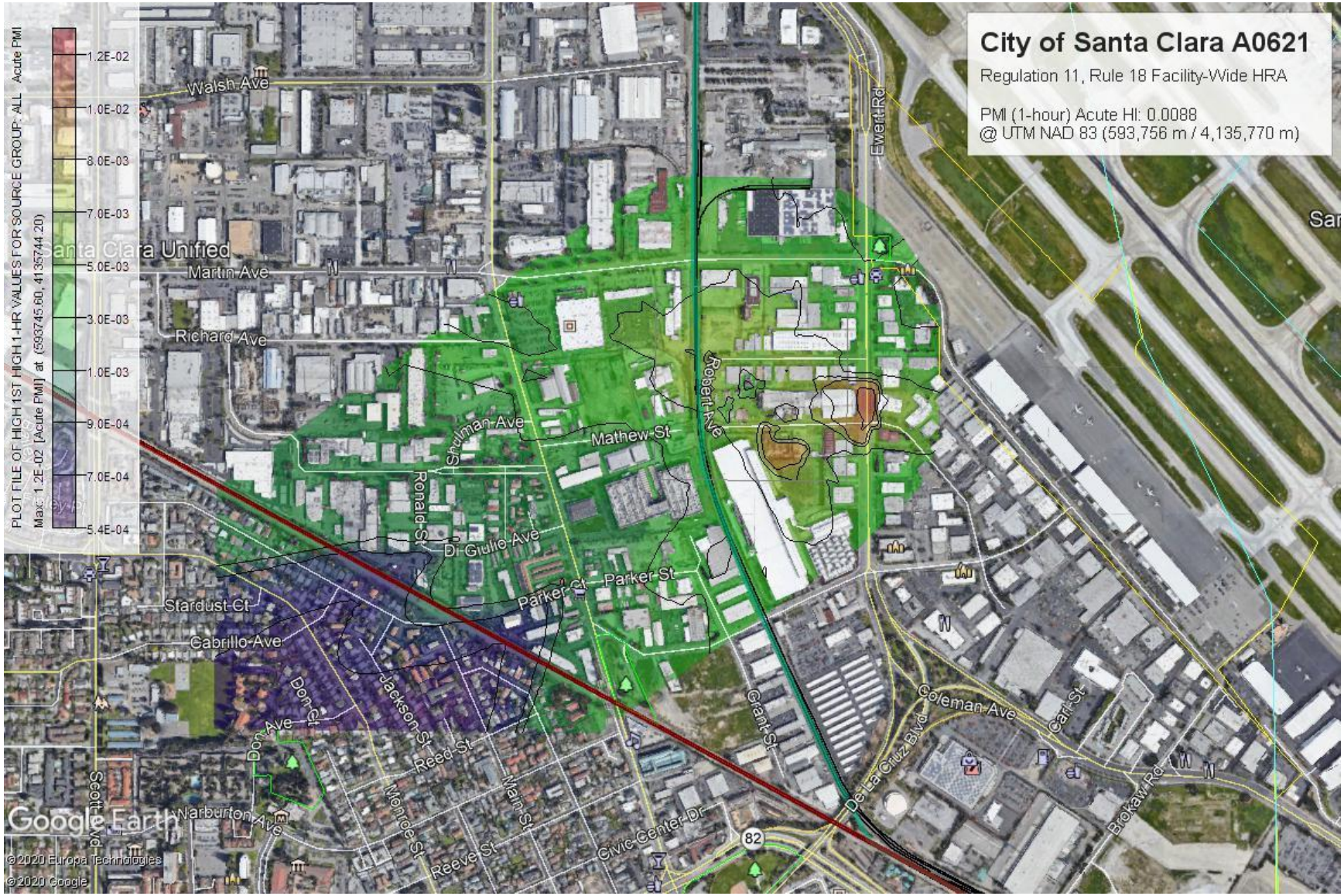

City of Santa Clara A0621
Regulation 11, Rule 18 Facility-Wide HRA
Student Chronic HI: 0.000089
@ UTM NAD 83 (592,161 m / 4,135,201 m)
PLOT FILE OF PERIOD VALUES FOR SOURCE GROUP: ALL Chronic Hazard Index
Max: 4.6E-04 [Chronic Hazard Index] at (592098.16, 4136324.66)
4.7E-04
4.0E-04
3.0E-04
2.0E-04
1.0E-04
9.0E-05
8.0E-05
7.0E-05
6.0E-05
Walsh Ave
Santa Clara Unified
Richard Ave
Pasetta Dr
Monroe St
Stardust Ct
Rancho McCormick Blvd
Cabrillo Ave
Menzel Pl
Castro Pl
Vargas Pl
Raggio Ave
Warburton Ave
Fatjo Pl
Thompson Pl
Arguello Pl
Graham Ln
Staats Way
Royal Dr
Aza Dr
Scott Blvd
Don Ave
Reed St
Main St
Reeve St
El Camino Real
Lewis St
Harrison St
Grant St
Robert Ave
Parker St
Shuman Ave
Ronald St
Avila Ave
Mathew St
Coleman Ave
Carl St
Brokaw Rd
Civic Center Dr
Santa Clara
95050
82
Google Earth
©2020 Europa Technologies
©2020 Google


City of Santa Clara A0621
Regulation 11, Rule 18 Facility-Wide HRA
PMI (1-hour) Acute HI: 0.0088
@ UTM NAD 83 (593,756 m / 4,135,770 m)
PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL Acute PMI
1.2E-02
1.0E-02
8.0E-03
7.0E-03
5.0E-03
3.0E-03
1.0E-03
9.0E-04
7.0E-04
5.4E-04
Walsh Ave
Martin Ave
Richard Ave
Ewert Rd
Robert Ave
Shulman Ave
Mathew St
Ronald St
Di Giulio Ave
Parker Ct
Parker St
Stardust Ct
Gabrillo Ave
Don Ct
Don Ave
Jackson St
Reed St
Grant St
Coleman Ave
Carl St
De La Cruz Blvd
Bokaw Rd
Scott Blvd
Narburton Ave
Monroe St
Main St
Reeve St
Civic Center Dr
82
Google Earth
©2020 Europa Technologies
©2020 Google

12. Appendix D – HARP2 Summary Report

HARP Project Summary Report 6/8/2020 10:21:17 AM

PROJECT INFORMATION
HARP Version: 19121
Project Name: June2020Plant621
Project Output Directory: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\June2020Plant621
HARP Database: NA

FACILITY INFORMATION
Origin
X (m):593483.73
Y (m):4135796.11
Zone:10
No. of Sources:0
No. of Buildings:0

EMISSION INVENTORY
No. of Pollutants:46
No. of Background Pollutants:0

Emissions

ScrID	StkID	ProID	PolID	PolAbbrev	Multi	Annual Ems (lbs/yr)	MaxHr Ems (lbs/hr)	MWAF
S1	0	0	75070	Acetaldehyde	1	58.4	0.0101	1
S1	0	0	107028	Acrolein	1	8.07	0.0014	1
S1	0	0	7440382	Arsenic	1	0.00964	1.67E-06	1
S1	0	0	71432	Benzene	1	2.89	0.000668	1
S1	0	0	7440417	Beryllium	1	0.021	3.63E-06	1
S1	0	0	106990	1,3-Butadiene	1	0.0264	4.58E-06	1
S1	0	0	7440439	Cadmium	1	0.082	1.42E-05	1
S1	0	0	18540299	Cr(VI)	1	0.00802	1.39E-06	1
S1	0	0	7440508	Copper	1	0.767	0.000133	1
S1	0	0	100414	Ethyl Benzene	1	7.66	0.00133	1
S1	0	0	50000	Formaldehyde	1	74.1	0.0264	1
S1	0	0	110543	Hexane	1	111	0.0192	1
S1	0	0	7439921	Lead	1	0.23	3.98E-05	1
S1	0	0	7439965	Manganese	1	0.641	0.000111	1
S1	0	0	7439976	Mercury	1	0.641	0.000111	1
S1	0	0	91203	Naphthalene	1	0.71	0.000123	1
S1	0	0	7440020	Nickel	1	0.082	1.42E-05	1
S1	0	0	1151	PAHs-w/o	1	0.00926	1.6E-06	1
S1	0	0	115071	Propylene	1	330	0.057	1
S1	0	0	75569	Propylene Oxide	1	8.49	0.00147	1
S1	0	0	7782492	Selenium	1	0.162	2.81E-05	1
S1	0	0	108883	Toluene	1	30.4	0.00526	1
S1	0	0	1330207	Xylenes	1	11.2	0.00193	1
S2	0	0	75070	Acetaldehyde	1	52.4	0.0101	1
S2	0	0	107028	Acrolein	1	7.24	0.0014	1
S2	0	0	7440382	Arsenic	1	0.00865	1.67E-06	1

S2	0	0	71432	Benzene	1	1.96	0.000668	1
S2	0	0	7440417	Beryllium	1	0.0188	3.63E-06	1
S2	0	0	106990	1,3-Butadiene	1	0.0237	4.58E-06	1
S2	0	0	7440439	Cadmium	1	0.0736	1.42E-05	1
S2	0	0	18540299	Cr(VI)	1	0.0072	1.39E-06	1
S2	0	0	7440508	Copper	1	0.689	0.000133	1
S2	0	0	100414	Ethyl Benzene	1	6.88	0.00133	1
S2	0	0	50000	Formaldehyde	1	82.9	0.0264	1
S2	0	0	110543	Hexane	1	99.4	0.0192	1
S2	0	0	7439921	Lead	1	0.206	3.98E-05	1
S2	0	0	7439965	Manganese	1	0.575	0.000111	1
S2	0	0	7439976	Mercury	1	0.575	0.000111	1
S2	0	0	91203	Naphthalene	1	0.637	0.000123	1
S2	0	0	7440020	Nickel	1	0.0736	1.42E-05	1
S2	0	0	1151	PAHs-w/o	1	0.00831	1.6E-06	1
S2	0	0	115071	Propylene	1	296	0.057	1
S2	0	0	75569	Propylene Oxide	1	7.62	0.00147	1
S2	0	0	7782492	Selenium	1	0.146	2.81E-05	1
S2	0	0	108883	Toluene	1	27.2	0.00526	1
S2	0	0	1330207	Xylenes	1	10	0.00193	1

Background

PolID	PolAbbrev	Conc (ug/m^3)	MWAF

Ground level concentration files (\glc\)

100414MAXHR.txt
100414PER.txt
106990MAXHR.txt
106990PER.txt
107028MAXHR.txt
107028PER.txt
108883MAXHR.txt
108883PER.txt
108952MAXHR.txt
108952PER.txt
110543MAXHR.txt
110543PER.txt
115071MAXHR.txt
115071PER.txt
1151MAXHR.txt
1151PER.txt
1330207MAXHR.txt
1330207PER.txt
18540299MAXHR.txt
18540299PER.txt
50000MAXHR.txt
50000PER.txt
71432MAXHR.txt
71432PER.txt

```
7439921MAXHR.txt
7439921PER.txt
7439965MAXHR.txt
7439965PER.txt
7439976MAXHR.txt
7439976PER.txt
7440020MAXHR.txt
7440020PER.txt
7440382MAXHR.txt
7440382PER.txt
7440417MAXHR.txt
7440417PER.txt
7440439MAXHR.txt
7440439PER.txt
7440508MAXHR.txt
7440508PER.txt
75070MAXHR.txt
75070PER.txt
75569MAXHR.txt
75569PER.txt
7664417MAXHR.txt
7664417PER.txt
7782492MAXHR.txt
7782492PER.txt
7783064MAXHR.txt
7783064PER.txt
91203MAXHR.txt
91203PER.txt

***POLLUTANT HEALTH INFORMATION***
Health Database: C:\IrmasHRAs\ARB_Health Table\HealthDB_March_31_2016 _corrected_Oct_2018.mdb
Health Table Version: HEALTH
Official: False
```

PolID	PolAbbrev	InhCancer	OralCancer	AcuteREL	InhChronicREL	OralChronicREL	InhChronic8HRREL
75070	Acetaldehyde	0.01		470	140		300
107028	Acrolein			2.5	0.35		0.7
7440382	Arsenic	12	1.5	0.2	0.015	3.5E-06	0.015
71432	Benzene	0.1		27	3		3
7440417	Beryllium	8.4			0.007	0.002	
106990	1,3-Butadiene	0.6		660	2		9
7440439	Cadmium	15			0.02	0.0005	
18540299	Cr(VI)	510	0.5		0.2	0.02	
7440508	Copper			100			
100414	Ethyl Benzene	0.0087			2000		
50000	Formaldehyde	0.021		55	9		9
110543	Hexane				7000		
7439921	Lead	0.042	0.0085				
7439965	Manganese				0.09		0.17
7439976	Mercury			0.6	0.03	0.00016	0.06

91203	Naphthalene	0.12			9		
7440020	Nickel	0.91		0.2	0.014	0.011	0.06
1151	PAHs-w/o	3.9	12				
115071	Propylene				3000		
75569	Propylene Oxide	0.013		3100	30		
7782492	Selenium				20	0.005	
108883	Toluene			37000	300		
1330207	Xylenes			22000	700		

AIR DISPERSION MODELING INFORMATION
Versions used in HARP. All executables were obtained from USEPA's Support Center for Regulatory Atmospheric Modeling website (http://www.epa.gov/scram001/)
AERMOD: 18081
AERMAP: 18081
BPIPPRM: 04274
AERPLOT: 13329

METEOROLOGICAL INFORMATION
Version:
Surface File:
Profile File:
Surface Station:
Upper Station:
On-Site Station:

LIST OF AIR DISPERSION FILES
AERMOD Input File:
AERMOD Output File:
AERMOD Error File:
Plotfile list
_____
City_Santa_Clara_5yrs_OTHER.plt
City_Santa_Clara_5yrs_OTHER_S1_1-HR_1ST.plt
City_Santa_Clara_5yrs_OTHER_S1_PERIOD.plt
City_Santa_Clara_5yrs_OTHER_S2_1-HR_1ST.plt
City_Santa_Clara_5yrs_OTHER_S2_PERIOD.plt

LIST OF RISK ASSESSMENT FILES
Health risk analysis files (\hra\)
_____
ProjectSummaryReport_Resident.txt
ProjectSummaryReport_Student.txt
ProjectSummaryReport_Worker.txt
ResCancerRisk.csv
ResCancerRiskSumByRec.csv
ResGLCList.csv
ResHRAInput.hra
ResNCAcuteRisk.csv
ResNCAcuteRiskSumByRec.csv
ResNCChronicRisk.csv
ResNCChronicRiskSumByRec.csv

```
ResOutput.txt
ResPathwayRec.csv
ResPolDB.csv
Res_Cancer.BND
Res_Cancer.grf
Res_Cancer.plt
StudentCancerRisk.csv
StudentCancerRiskSumByRec.csv
StudentGLCList.csv
StudentHRAInput.hra
StudentNCAcuteRisk.csv
StudentNCAcuteRiskSumByRec.csv
StudentNCChronicRisk.csv
StudentNCChronicRiskSumByRec.csv
StudentOutput.txt
StudentPathwayRec.csv
StudentPolDB.csv
Student_Cancer.plt
WorkerCancerRisk.csv
WorkerCancerRiskSumByRec.csv
WorkerGLCList.csv
WorkerHRAInput.hra
WorkerNCAcuteRisk.csv
WorkerNCAcuteRiskSumByRec.csv
WorkerNCChronicRisk.csv
WorkerNCChronicRiskSumByRec.csv
WorkerOutput.txt
WorkerPathwayRec.csv
WorkerPolDB.csv
Worker_Cancer.BND
Worker_Cancer.grf
Worker_Cancer.plt

Spatial averaging files (\sa\)
_____________________
Worker HARP Project Summary Report 6/8/2020 10:26:45 AM

***PROJECT INFORMATION***
HARP Version: 19121
Project Name: June2020Plant621
Project Output Directory: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\June2020Plant621
HARP Database: NA

***FACILITY INFORMATION***
Origin
X (m):593483.73
Y (m):4135796.11
Zone:10
No. of Sources:0
No. of Buildings:0
```

EMISSION INVENTORY
No. of Pollutants:46
No. of Background Pollutants:0

Emissions

ScrID	StkID	ProID	PolID	PolAbbrev	Multi	Annual Ems (lbs/yr)	MaxHr Ems (lbs/hr)	MWAF
S1	0	0	75070	Acetaldehyde	1	58.4	0.0101	1
S1	0	0	107028	Acrolein	1	8.07	0.0014	1
S1	0	0	7440382	Arsenic	1	0.00964	1.67E-06	1
S1	0	0	71432	Benzene	1	2.89	0.000668	1
S1	0	0	7440417	Beryllium	1	0.021	3.63E-06	1
S1	0	0	106990	1,3-Butadiene	1	0.0264	4.58E-06	1
S1	0	0	7440439	Cadmium	1	0.082	1.42E-05	1
S1	0	0	18540299	Cr(VI)	1	0.00802	1.39E-06	1
S1	0	0	7440508	Copper	1	0.767	0.000133	1
S1	0	0	100414	Ethyl Benzene	1	7.66	0.00133	1
S1	0	0	50000	Formaldehyde	1	74.1	0.0264	1
S1	0	0	110543	Hexane	1	111	0.0192	1
S1	0	0	7439921	Lead	1	0.23	3.98E-05	1
S1	0	0	7439965	Manganese	1	0.641	0.000111	1
S1	0	0	7439976	Mercury	1	0.641	0.000111	1
S1	0	0	91203	Naphthalene	1	0.71	0.000123	1
S1	0	0	7440020	Nickel	1	0.082	1.42E-05	1
S1	0	0	1151	PAHs-w/o	1	0.00926	1.6E-06	1
S1	0	0	115071	Propylene	1	330	0.057	1
S1	0	0	75569	Propylene Oxide	1	8.49	0.00147	1
S1	0	0	7782492	Selenium	1	0.162	2.81E-05	1
S1	0	0	108883	Toluene	1	30.4	0.00526	1
S1	0	0	1330207	Xylenes	1	11.2	0.00193	1
S2	0	0	75070	Acetaldehyde	1	52.4	0.0101	1
S2	0	0	107028	Acrolein	1	7.24	0.0014	1
S2	0	0	7440382	Arsenic	1	0.00865	1.67E-06	1
S2	0	0	71432	Benzene	1	1.96	0.000668	1
S2	0	0	7440417	Beryllium	1	0.0188	3.63E-06	1
S2	0	0	106990	1,3-Butadiene	1	0.0237	4.58E-06	1
S2	0	0	7440439	Cadmium	1	0.0736	1.42E-05	1
S2	0	0	18540299	Cr(VI)	1	0.0072	1.39E-06	1
S2	0	0	7440508	Copper	1	0.689	0.000133	1
S2	0	0	100414	Ethyl Benzene	1	6.88	0.00133	1
S2	0	0	50000	Formaldehyde	1	82.9	0.0264	1
S2	0	0	110543	Hexane	1	99.4	0.0192	1
S2	0	0	7439921	Lead	1	0.206	3.98E-05	1
S2	0	0	7439965	Manganese	1	0.575	0.000111	1
S2	0	0	7439976	Mercury	1	0.575	0.000111	1
S2	0	0	91203	Naphthalene	1	0.637	0.000123	1
S2	0	0	7440020	Nickel	1	0.0736	1.42E-05	1
S2	0	0	1151	PAHs-w/o	1	0.00831	1.6E-06	1
S2	0	0	115071	Propylene	1	296	0.057	1

S2	0	0	75569	Propylene Oxide	1	7.62	0.00147	1
S2	0	0	7782492	Selenium	1	0.146	2.81E-05	1
S2	0	0	108883	Toluene	1	27.2	0.00526	1
S2	0	0	1330207	Xylenes	1	10	0.00193	1

Background

PolID	PolAbbrev	Conc (ug/m^3)	MWAF

Ground level concentration files (\glc\)

100414MAXHR.txt
100414PER.txt
106990MAXHR.txt
106990PER.txt
107028MAXHR.txt
107028PER.txt
108883MAXHR.txt
108883PER.txt
108952MAXHR.txt
108952PER.txt
110543MAXHR.txt
110543PER.txt
115071MAXHR.txt
115071PER.txt
1151MAXHR.txt
1151PER.txt
1330207MAXHR.txt
1330207PER.txt
18540299MAXHR.txt
18540299PER.txt
50000MAXHR.txt
50000PER.txt
71432MAXHR.txt
71432PER.txt
7439921MAXHR.txt
7439921PER.txt
7439965MAXHR.txt
7439965PER.txt
7439976MAXHR.txt
7439976PER.txt
7440020MAXHR.txt
7440020PER.txt
7440382MAXHR.txt
7440382PER.txt
7440417MAXHR.txt
7440417PER.txt
7440439MAXHR.txt
7440439PER.txt
7440508MAXHR.txt
7440508PER.txt

75070MAXHR.txt
75070PER.txt
75569MAXHR.txt
75569PER.txt
7664417MAXHR.txt
7664417PER.txt
7782492MAXHR.txt
7782492PER.txt
7783064MAXHR.txt
7783064PER.txt
91203MAXHR.txt
91203PER.txt

POLLUTANT HEALTH INFORMATION
Health Database: C:\IrmasHRAs\ARB_Health Table\HealthDB_March_31_2016 _corrected_Oct_2018.mdb
Health Table Version: HEALTH
Official: False

PolID	PolAbbrev	InhCancer	OralCancer	AcuteREL	InhChronicREL	OralChronicREL	InhChronic8HRREL
75070	Acetaldehyde	0.01		470	140		300
107028	Acrolein			2.5	0.35		0.7
7440382	Arsenic	12	1.5	0.2	0.015	3.5E-06	0.015
71432	Benzene	0.1		27	3		3
7440417	Beryllium	8.4			0.007	0.002	
106990	1,3-Butadiene	0.6		660	2		9
7440439	Cadmium	15			0.02	0.0005	
18540299	Cr(VI)	510	0.5		0.2	0.02	
7440508	Copper			100			
100414	Ethyl Benzene	0.0087			2000		
50000	Formaldehyde	0.021		55	9		9
110543	Hexane				7000		
7439921	Lead	0.042	0.0085				
7439965	Manganese				0.09		0.17
7439976	Mercury			0.6	0.03	0.00016	0.06
91203	Naphthalene	0.12			9		
7440020	Nickel	0.91		0.2	0.014	0.011	0.06
1151	PAHs-w/o	3.9	12				
115071	Propylene				3000		
75569	Propylene Oxide	0.013		3100	30		
7782492	Selenium				20	0.005	
108883	Toluene			37000	300		
1330207	Xylenes			22000	700		

AIR DISPERSION MODELING INFORMATION
Versions used in HARP. All executables were obtained from USEPA's Support Center for Regulatory Atmospheric Modeling website (http://www.epa.gov/scram001/)
AERMOD: 18081
AERMAP: 18081
BPIPPRM: 04274
AERPLOT: 13329

```
***METEOROLOGICAL INFORMATION***
Version:
Surface File:
Profile File:
Surface Station:
Upper Station:
On-Site Station:

***LIST OF AIR DISPERSION FILES***
AERMOD Input File:
AERMOD Output File:
AERMOD Error File:
Plotfile list
_____________
City_Santa_Clara_5yrs_OTHER.plt
City_Santa_Clara_5yrs_OTHER_S1_1-HR_1ST.plt
City_Santa_Clara_5yrs_OTHER_S1_PERIOD.plt
City_Santa_Clara_5yrs_OTHER_S2_1-HR_1ST.plt
City_Santa_Clara_5yrs_OTHER_S2_PERIOD.plt

***LIST OF RISK ASSESSMENT FILES***
Health risk analysis files (\hra\)
_________
ProjectSummaryReport_Resident.txt
ProjectSummaryReport_Worker.txt
ResCancerRisk.csv
ResCancerRiskSumByRec.csv
ResGLCList.csv
ResHRAInput.hra
ResNCAcuteRisk.csv
ResNCAcuteRiskSumByRec.csv
ResNCChronicRisk.csv
ResNCChronicRiskSumByRec.csv
ResOutput.txt
ResPathwayRec.csv
ResPolDB.csv
Res_Cancer.BND
Res_Cancer.grf
Res_Cancer.plt
WorkerCancerRisk.csv
WorkerCancerRiskSumByRec.csv
WorkerGLCList.csv
WorkerHRAInput.hra
WorkerNCAcuteRisk.csv
WorkerNCAcuteRiskSumByRec.csv
WorkerNCChronicRisk.csv
WorkerNCChronicRiskSumByRec.csv
WorkerOutput.txt
WorkerPathwayRec.csv
WorkerPolDB.csv
```

Worker_Cancer.BND
Worker_Cancer.grf
Worker_Cancer.plt

Spatial averaging files (\sa\)
_____

Student: HARP Project Summary Report 6/8/2020 7:51:20 PM

PROJECT INFORMATION
HARP Version: 19121
Project Name: School
Project Output Directory: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised HRA\School
HARP Database: NA

FACILITY INFORMATION
Origin
X (m):593483.73
Y (m):4135796.11
Zone:10
No. of Sources:0
No. of Buildings:0

EMISSION INVENTORY
No. of Pollutants:46
No. of Background Pollutants:0

Emissions

ScrID	StkID	ProID	PolID	PolAbbrev	Multi	Annual Ems (lbs/yr)	MaxHr Ems (lbs/hr)	MWAF
S1	0	0	75070	Acetaldehyde	1	58.4	0.0101	1
S1	0	0	107028	Acrolein	1	8.07	0.0014	1
S1	0	0	7440382	Arsenic	1	0.00964	1.67E-06	1
S1	0	0	71432	Benzene	1	2.89	0.000668	1
S1	0	0	7440417	Beryllium	1	0.021	3.63E-06	1
S1	0	0	106990	1,3-Butadiene	1	0.0264	4.58E-06	1
S1	0	0	7440439	Cadmium	1	0.082	1.42E-05	1
S1	0	0	18540299	Cr(VI)	1	0.00802	1.39E-06	1
S1	0	0	7440508	Copper	1	0.767	0.000133	1
S1	0	0	100414	Ethyl Benzene	1	7.66	0.00133	1
S1	0	0	50000	Formaldehyde	1	74.1	0.0264	1
S1	0	0	110543	Hexane	1	111	0.0192	1
S1	0	0	7439921	Lead	1	0.23	3.98E-05	1
S1	0	0	7439965	Manganese	1	0.641	0.000111	1
S1	0	0	7439976	Mercury	1	0.641	0.000111	1
S1	0	0	91203	Naphthalene	1	0.71	0.000123	1
S1	0	0	7440020	Nickel	1	0.082	1.42E-05	1
S1	0	0	1151	PAHs-w/o	1	0.00926	1.6E-06	1
S1	0	0	115071	Propylene	1	330	0.057	1

S1	0	0	75569	Propylene Oxide	1	8.49	0.00147	1
S1	0	0	7782492	Selenium	1	0.162	2.81E-05	1
S1	0	0	108883	Toluene	1	30.4	0.00526	1
S1	0	0	1330207	Xylenes	1	11.2	0.00193	1
S2	0	0	75070	Acetaldehyde	1	52.4	0.0101	1
S2	0	0	107028	Acrolein	1	7.24	0.0014	1
S2	0	0	7440382	Arsenic	1	0.00865	1.67E-06	1
S2	0	0	71432	Benzene	1	1.96	0.000668	1
S2	0	0	7440417	Beryllium	1	0.0188	3.63E-06	1
S2	0	0	106990	1,3-Butadiene	1	0.0237	4.58E-06	1
S2	0	0	7440439	Cadmium	1	0.0736	1.42E-05	1
S2	0	0	18540299	Cr(VI)	1	0.0072	1.39E-06	1
S2	0	0	7440508	Copper	1	0.689	0.000133	1
S2	0	0	100414	Ethyl Benzene	1	6.88	0.00133	1
S2	0	0	50000	Formaldehyde	1	82.9	0.0264	1
S2	0	0	110543	Hexane	1	99.4	0.0192	1
S2	0	0	7439921	Lead	1	0.206	3.98E-05	1
S2	0	0	7439965	Manganese	1	0.575	0.000111	1
S2	0	0	7439976	Mercury	1	0.575	0.000111	1
S2	0	0	91203	Naphthalene	1	0.637	0.000123	1
S2	0	0	7440020	Nickel	1	0.0736	1.42E-05	1
S2	0	0	1151	PAHs-w/o	1	0.00831	1.6E-06	1
S2	0	0	115071	Propylene	1	296	0.057	1
S2	0	0	75569	Propylene Oxide	1	7.62	0.00147	1
S2	0	0	7782492	Selenium	1	0.146	2.81E-05	1
S2	0	0	108883	Toluene	1	27.2	0.00526	1
S2	0	0	1330207	Xylenes	1	10	0.00193	1

Background

PolID	PolAbbrev	Conc (ug/m^3)	MWAF

Ground level concentration files (\glc\)

100414MAXHR.txt
100414PER.txt
106990MAXHR.txt
106990PER.txt
107028MAXHR.txt
107028PER.txt
108883MAXHR.txt
108883PER.txt
108952MAXHR.txt
108952PER.txt
110543MAXHR.txt
110543PER.txt
115071MAXHR.txt
115071PER.txt
1151MAXHR.txt
1151PER.txt
1330207MAXHR.txt

1330207PER.txt
18540299MAXHR.txt
18540299PER.txt
50000MAXHR.txt
50000PER.txt
71432MAXHR.txt
71432PER.txt
7439921MAXHR.txt
7439921PER.txt
7439965MAXHR.txt
7439965PER.txt
7439976MAXHR.txt
7439976PER.txt
7440020MAXHR.txt
7440020PER.txt
7440382MAXHR.txt
7440382PER.txt
7440417MAXHR.txt
7440417PER.txt
7440439MAXHR.txt
7440439PER.txt
7440508MAXHR.txt
7440508PER.txt
75070MAXHR.txt
75070PER.txt
75569MAXHR.txt
75569PER.txt
7664417MAXHR.txt
7664417PER.txt
7782492MAXHR.txt
7782492PER.txt
7783064MAXHR.txt
7783064PER.txt
91203MAXHR.txt
91203PER.txt

POLLUTANT HEALTH INFORMATION
Health Database: C:\IrmasHRAs\ARB_Health Table\HealthDB_March_31_2016 _corrected_Oct_2018.mdb
Health Table Version: HEALTH
Official: False

PolID	PolAbbrev	InhCancer	OralCancer	AcuteREL	InhChronicREL	OralChronicREL	InhChronic8HRREL
75070	Acetaldehyde	0.01		470	140		300
107028	Acrolein			2.5	0.35		0.7
7440382	Arsenic	12	1.5	0.2	0.015	3.5E-06	0.015
71432	Benzene	0.1		27	3		3
7440417	Beryllium	8.4			0.007	0.002	
106990	1,3-Butadiene	0.6		660	2		9
7440439	Cadmium	15			0.02	0.0005	
18540299	Cr(VI)	510	0.5		0.2	0.02	

7440508	Copper			100			
100414	Ethyl Benzene	0.0087			2000		
50000	Formaldehyde	0.021		55	9		9
110543	Hexane				7000		
7439921	Lead	0.042	0.0085				
7439965	Manganese				0.09		0.17
7439976	Mercury			0.6	0.03	0.00016	0.06
91203	Naphthalene	0.12			9		
7440020	Nickel	0.91		0.2	0.014	0.011	0.06
1151	PAHs-w/o	3.9	12				
115071	Propylene				3000		
75569	Propylene Oxide	0.013		3100	30		
7782492	Selenium				20	0.005	
108883	Toluene			37000	300		
1330207	Xylenes			22000	700		

AIR DISPERSION MODELING INFORMATION
Versions used in HARP. All executables were obtained from USEPA's Support Center for Regulatory Atmospheric Modeling website (http://www.epa.gov/scram001/)
AERMOD: 18081
AERMAP: 18081
BPIPPRM: 04274
AERPLOT: 13329

METEOROLOGICAL INFORMATION
Version:
Surface File:
Profile File:
Surface Station:
Upper Station:
On-Site Station:

LIST OF AIR DISPERSION FILES
AERMOD Input File:
AERMOD Output File:
AERMOD Error File:
Plotfile list
_____

LIST OF RISK ASSESSMENT FILES
Health risk analysis files (\hra\)

_____
StudentCancerRisk.csv
StudentCancerRiskSumByRec.csv
StudentGLCList.csv
StudentHRAInput.hra
StudentNCAcuteRisk.csv
StudentNCAcuteRiskSumByRec.csv
StudentNCChronicRisk.csv
StudentNCChronicRiskSumByRec.csv
StudentOutput.txt

```
StudentPathwayRec.csv
StudentPolDB.csv
Student_Cancer.BND
Student_Cancer.plt

Spatial averaging files (\sa\)
_____________________
```

HARP2 - HRACalc (dated 19044) 6/8/2020 10:18:46 AM - Output Log

GLCs loaded successfully

Pollutants loaded successfully

Pathway receptors loaded successfully

****

RISK SCENARIO SETTINGS

Receptor Type: Resident

Scenario: All

Calculation Method: Derived

!!!Health information was not supplied by the official health database!!!

****

EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25

Total Exposure Duration: 30

Exposure Duration Bin Distribution

3rd Trimester Bin: 0.25

0<2 Years Bin: 2

2<9 Years Bin: 0

2<16 Years Bin: 14

16<30 Years Bin: 14

16 to 70 Years Bin: 0

****

PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True

Soil: True

Dermal: True

Mother's milk: True

Water: False

Fish: False

Homegrown crops: False

Beef: False

Dairy: False

Pig: False

Chicken: False

Egg: False

****

INHALATION

Daily breathing rate: RMP

Worker Adjustment Factors

Worker adjustment factors enabled: NO

```
**Fraction at time at home**

3rd Trimester to 16 years: OFF

16 years to 70 years: ON


*********************************

SOIL & DERMAL PATHWAY SETTINGS


Deposition rate (m/s): 0.02

Soil mixing depth (m): 0.01

Dermal climate: Warm


*********************************

TIER 2 SETTINGS

Tier2 not used.


*********************************


Calculating cancer risk

Cancer risk breakdown by pollutant and receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\June2020Plant621\hra\ResCancerRisk.csv

Cancer risk total by receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\June2020Plant621\hra\ResCancerRiskSumByRec.csv

Calculating chronic risk

Chronic risk breakdown by pollutant and receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\June2020Plant621\hra\ResNCChronicRisk.csv

Chronic risk total by receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\June2020Plant621\hra\ResNCChronicRiskSumByRec.csv

Calculating acute risk

Acute risk breakdown by pollutant and receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\June2020Plant621\hra\ResNCAcuteRisk.csv
```

```
Acute risk total by receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\June2020Plant621\hra\ResNCAcuteRiskSumByRec.csv

HRA ran successfully

HARP2 - HRACalc (dated 19044) 11/6/2019 2:39:46 PM - Output Log


GLCs loaded successfully

Pollutants loaded successfully

Pathway receptors loaded successfully

**********

HARP2 - HRACalc (dated 19044) 6/8/2020 10:23:24 AM - Output Log


GLCs loaded successfully

Pollutants loaded successfully

Pathway receptors loaded successfully

**********

RISK SCENARIO SETTINGS


Receptor Type: Worker

Scenario: All

Calculation Method: Derived


*!!!Health information was not supplied by the official health database!!!*


**********

EXPOSURE DURATION PARAMETERS FOR CANCER


Start Age: 16

Total Exposure Duration: 25
```

Exposure Duration Bin Distribution

3rd Trimester Bin: 0

0<2 Years Bin: 0

2<9 Years Bin: 0

2<16 Years Bin: 0

16<30 Years Bin: 0

16 to 70 Years Bin: 25

****

PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True

Soil: True

Dermal: True

Mother's milk: False

Water: False

Fish: False

Homegrown crops: False

Beef: False

Dairy: False

Pig: False

Chicken: False

Egg: False

****

INHALATION

Daily breathing rate: Moderate8HR

Worker Adjustment Factors

NOTE: The worker adjustment factors below are only used for cancer assessments. However, the GLC adjustment factor is also applied to 8-hr noncancer chronic assessments.

Worker adjustments factors enabled: YES

GLC adjustment factor: 1

Exposure frequency: 250

Fraction at time at home

3rd Trimester to 16 years: OFF

16 years to 70 years: OFF

****

SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.02

Soil mixing depth (m): 0.01

Dermal climate: Warm

****

TIER 2 SETTINGS

Tier2 not used.

****

```
Calculating cancer risk

Cancer risk breakdown by pollutant and receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\June2020Plant621\hra\WorkerCancerRisk.csv

Cancer risk total by receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\June2020Plant621\hra\WorkerCancerRiskSumByRec.csv

Calculating chronic risk

Chronic risk breakdown by pollutant and receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\June2020Plant621\hra\WorkerNCChronicRisk.csv

Chronic risk total by receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\June2020Plant621\hra\WorkerNCChronicRiskSumByRec.csv

Calculating acute risk

Acute risk breakdown by pollutant and receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\June2020Plant621\hra\WorkerNCAcuteRisk.csv

Acute risk total by receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\June2020Plant621\hra\WorkerNCAcuteRiskSumByRec.csv

HRA ran successfully


HARP2 - HRACalc (dated 19044) 6/8/2020 7:49:09 PM - Output Log


GLCs loaded successfully

Pollutants loaded successfully

Pathway receptors loaded successfully

**********************************

RISK SCENARIO SETTINGS


Receptor Type: Resident

Scenario: All

Calculation Method: HighEnd
```

!!!Health information was not supplied by the official health database!!!

****

EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: 2

Total Exposure Duration: 9

Exposure Duration Bin Distribution

3rd Trimester Bin: 0

0<2 Years Bin: 0

2<9 Years Bin: 0

2<16 Years Bin: 9

16<30 Years Bin: 0

16 to 70 Years Bin: 0

****

PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True

Soil: True

Dermal: True

Mother's milk: True

Water: False

Fish: False

Homegrown crops: False

Beef: False

Dairy: False

Pig: False

Chicken: False

Egg: False

****

INHALATION

Daily breathing rate: Moderate8HR

Worker Adjustment Factors

NOTE: The worker adjustment factors below are only used for cancer assessments. However, the GLC adjustment factor is also applied to 8-hr noncancer chronic assessments.

Worker adjustments factors enabled: YES

GLC adjustment factor: 3.4

Exposure frequency: 180

Fraction at time at home

3rd Trimester to 16 years: OFF

16 years to 70 years: OFF

****

SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.02

Soil mixing depth (m): 0.01

```
Dermal climate: Warm


**********

TIER 2 SETTINGS


Tier2 adjustments were used in this assessment.  Please see the input file for details.

Tier2 - What was changed: NOT USING OFFICIAL HEALTH DATABASE|ED or start age changed|

Calculating cancer risk

Cancer risk breakdown by pollutant and receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\School\hra\StudentCancerRisk.csv

Cancer risk total by receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\School\hra\StudentCancerRiskSumByRec.csv

Calculating chronic risk

Chronic risk breakdown by pollutant and receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\School\hra\StudentNCChronicRisk.csv

Chronic risk total by receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\School\hra\StudentNCChronicRiskSumByRec.csv

Calculating acute risk

Acute risk breakdown by pollutant and receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\School\hra\StudentNCAcuteRisk.csv

Acute risk total by receptor saved to: C:\IrmasHRAs\Reg11Rule18\Plant_621\Final_Document621\June_2020_Revised
HRA\School\hra\StudentNCAcuteRiskSumByRec.csv

HRA ran successfully
```

13. Appendix E – Land Use Determination

Land Use Determination from AERSURFACE

Plant 621 City of Santa Clara								
UTM Easting (meters):	593492.84							
UTM Northing (meters):	4135796.21							
UTM Zone: 10								
Datum: NAD83								
Study Radius for surface roughness (km):	3.0							
SECTOR: 1								
Starting Direction: 000						Urban%		
----------								
0 Missing, Out-of-Bounds, or Undefined:					0			
11 Open Water:					0			
12 Perennial Ice/Snow:					0			
21 Low Intensity Residential:					14509	50%		7254.5
22 High Intensity Residential:					190	100%		190
23 Commercial/Industrial/Transp:					11223	100%		11223
31 Bare Rock/Sand/Clay:					22			
32 Quarries/Strip Mines/Gravel:					0			
33 Transitional:					0			
41 Deciduous Forest:					1			
42 Evergreen Forest:					11			
43 Mixed Forest:					1			
51 Shrubland:					628			
61 Orchards/Vineyard/Other:					1086			
71 Grasslands/Herbaceous:					833			
81 Pasture/Hay:					0			
82 Row Crops:					0			
83 Small Grains:					0			
84 Fallow:					0			
85 Urban/Recreational Grasses:					2887			
91 Woody Wetlands:					0			
92 Emergent Herbaceous Wetlands:					35			

Total: 31426					31426			18667.5
						Urban% =	59%	
						Rural %	41%	

14. Appendix F – Wind Rose Plots

Wind Rose Plot for KSJC