APPENDIX C

Revised
Health Risk Assessment to Support Environmental Impact Analysis for the Proposed Union Crossing Commercial Development, Manteca, CA and Air Modeling Results

Prepared for:
EDAW,
Sacramento, California

Health Risk Assessment to Support Environmental Impact Analysis for the Proposed Union Crossing Commercial Development, Manteca, CA

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1.0 Introduction

This health risk assessment (HRA) is a comprehensive analysis of the potential health risks posed by operation of the proposed Union Crossing Center Commercial Development, located in Manteca, CA, in support of the environmental impact analysis required under the California Environmental Quality Act (CEQA) for the proposed action. The HRA evaluates toxic air contaminants (TACs) emitted into the environment due to the proposed project, the potential for human exposure, and a quantitative assessment of individual health risks associated with those levels of exposure. The principal concerns for public health are associated with emissions of TACs into the air during routine operation of the proposed facility.

1.1 Project Background

The project site is approximately 65 acres (including a portion of Woodward Avenue and the three residential parcels in the southwestern portion of the site that are not proposed for development) and is located in the southern portion of the city of Manteca. The project site is located immediately south of State Route 120 (SR 120), approximately 2 miles west of State Route 99 (SR 99), and 4 miles east of Interstate 5 (I-5). The site is generally bounded by SR 120 to the north; agricultural land and residences to the west and Woodward Avenue to the south and South Union Road and residences to the east.

Existing uses on the project site include row crops, an orchard, a rural residence in the southeastern portion of the site, and three additional rural residences in the southwestern portion of the site. In general, agricultural uses are the predominant land use in the project vicinity. However, with adoption of the City of Manteca General Plan (City General Plan) in 2003 and designation of the area for urban land uses, the area is experiencing an increasing number of development applications to convert agricultural lands to urban development. Low-density single-family residential subdivisions are developed to the north, directly across SR 120. In addition, several new residential subdivisions and a commercial center are under development or are proceeding through the development entitlement process to the west, south, and east of the project site.

The project site is located outside of the city limits, but within the City of Manteca's sphere of influence (SOI) and the City's Primary Urban Service Boundary. As a result, implementation of the project would require the annexation of the project site to the city. An annexation is the incorporation of land and water area into an existing community (e.g., City of Manteca) with a resulting change in the boundaries of that community. The State of California has delegated the authority for approving annexations to the San Joaquin County Local Agency Formation Commission (LAFCO). The San Joaquin County LAFCO would be the agency responsible for approving the annexation of the project to the city.

The City General Plan, which was updated in October 2003, designates the site for General Commercial (GC), Medium Density Residential (MDR), and Low Density Residential (LDR) land uses. Surrounding general plan designations include LDR and GC. The proposed project includes the prezoning and annexation of the site to the city of Manteca. Once annexed, the project site would be subject to the planning jurisdiction of the City of Manteca.

1.2 Project Description

The three primary components of the proposed project include (1) a northern retail site consisting of approximately 225,800 square feet of retail and restaurant space on approximately 22.7 acres, (2) a central retail site consisting of approximately 178,000 square feet of retail and restaurant space on

approximately 20 acres, and (3) a southern retail site consisting of 46,200 square feet of retail and restaurant space on approximately 5.8 acres. These project components would be constructed in three separate phases as described below. Although not currently proposed, some retail uses may be replaced by office uses if the market demands. This change in use is consistent with the current and proposed GC zoning of the site.

As part of the project, the proposed southern retail site would require a general plan amendment to redesignate the southern retail site from LDR to CG. In addition, the annexation and prezone of three residential parcels (10.9 acres) and a portion of Woodward Avenue (1.7 acres) in the southwestern portion of the site are proposed. No development is proposed at Woodward Avenue and for these three parcels. Figure 1 shows the proposed development site layout. The three phases of this development are described in greater detail below.

Phase 1: Northern Retail Site

The northern project site would include retail and restaurant spaces ranging in size from 3,500 square feet to 31,400 square feet and would be surrounded by a central parking area that would include 987 stalls.

Phase 2: Central Retail Site

The central retail site would consist of approximately 178,000 square feet of retail and restaurant space just south of the proposed Atherton Drive extension. Buildings in this portion of the site would also surround a central parking area that would include 777 stalls. On-site buildings would range in size from 5,600 square feet to 65,000 square feet. In addition, an approximately 1.5-acre stormwater detention basin would be constructed adjacent to the western project boundary and would serve the entire project site.

Phase 3: Southern Retail Site

Improvements proposed as part of Phase 3 include the development of approximately 46,200 square feet of retail and restaurant space within the southern portion of the project site. Southern retail site buildings would range in size from approximately 6,000 square feet to 20,000 square feet. The parking area for Phase 3 would include 263 stalls. A general plan amendment redesignating the parcel from LDR to CG is also proposed.

2.0 Identification of Air Toxic Contaminants

This section identifies and presents information on the TAC emissions from the proposed action, potential health hazards associated with the TACs emitted and their associated cancer risk and/or non-cancer health impact evaluation requirement. It addresses potential environmental impacts associated with human exposure to TACs of concern resulting from operation of Union Crossing Commercial Development.

Potential TAC emissions from the proposed project include emissions of diesel particulate matter (DPM) from delivery trucks, and poly aromatic hydrocarbons (PAH) and naphthalene from restaurant operations. The TACs are evaluated for long-term cancer and non-cancer chronic health hazard impacts. DPM and PAH are evaluated for cancer risk and naphthalene is evaluated for both cancer risk and non-cancer chronic health impacts. An assessment of acute exposure (short-term) was not conducted for the proposed project because the pollutants emitted do not have short-term (acute) impacts.

2.1 Health Risk Assessment Methodology

This health risk assessment contains TAC emission estimation, air dispersion analysis, and health risk characterization. The Guidance for Air Dispersion Modeling, (San Joaquin Valley Air Pollution Control District (SJVAPCD), 2006) describes recommended methodology for conducting CEQA health risk assessments for sources with dominant DPM emissions. Sources of TAC emissions from the project were estimated using emission factors provided in the SJVAPCD modeling guidance. The truck release parameters and emission factors presented in the guidance document were used to estimate DPM emissions from truck travel and idling. PAH and naphthalene emissions were estimated based on emission factors for different restaurant/fast food operations in the guidance document.

Exposure calculations were performed using air dispersion modeling analysis to predict ground-level air concentrations, by source. Results of the air modeling exposure predictions were then applied to the emission estimates along with respective cancer potency factors and chronic non-cancer reference exposure levels (RELs) to characterize health risk associated with predicted levels of exposure.

The methods used to assess potential human health risks from the proposed project are consistent with those prepared by The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (OEHHA, 2003) which describes algorithms, exposure methods, and cancer and non-cancer health values needed to perform a HRA under the Air Toxics Hot Spots Information and Assessment Act of 1987 (Hot Spots or AB 2588, Health and Safety Code Section 44360 et seq.). This manual is generally considered the best available reference for conducting human health risk assessment in California.

2.2 Air Toxic Substances Emitted

The primary TAC evaluated for potential health risks from operation of the proposed project is particulate emissions from diesel-fueled engine exhaust. Organic gases are also expected to be emitted from the proposed project from operations at nine restaurants onsite.

2.2.1 Sources of Air Toxic Emissions

Sources of TAC emissions include diesel-fueled engines and restaurant operations. Delivery truck travel, and truck idling are emission sources of DPM. Trucks entering and leaving the project site will include haul truck deliveries to the many stores in the northern and central areas of the development. The southern site of the development will be primarily serviced by smaller delivery vans.

The delivery haul trucks will generally follow travel routes established in the proposed project site design that facilitate traffic circulation and minimize vehicle congestion. Truck idling may occur in the receiving delivery docks at specific stores. However, the trucks will be limited to an idle time not to exceed five minutes for entering or exiting the delivery docks in compliance with state Air Toxic Control Measure (ATCM) that prohibits heavy-duty truck idling for five minutes or more. A transportation refrigeration unit (TRU's) is assumed to service the central site market once a week. Idling emissions from the TRU are calculated based on SJVAPCD modeling guidance at thirty minutes idling time per trip.

The onsite restaurants will emit organic gases from the cooking of animal fats and oils. Emissions will be controlled through to an exhaust manifold (hood) to a roof-top vent. In accordance with the SJVAPCD modeling guidance emissions from vehicles traveling on off-site roads or highways are not considered in HRA.

2.2.2 Health Risk Factors

Risk impacts from TAC emissions were evaluated in this analysis using health values approved and published by the OEHHA and the California Air Resources Board (ARB) for use in facility HRA's conducted for the AB 2588 Air Toxics Hot Spots Program (ARB, 2008). The TACs of concern that are addressed in this HRA are listed in Table 1, along with their respective OEHHA health values. The table lists the OEHHA adopted inhalation and oral cancer slope factors, non-cancer acute RELs, and inhalation and oral non-cancer chronic RELs. The cancer potency factors and RELs used are the most recent values updated in July 2008. In accordance with SJVAPCD modeling guidance, PAH emissions were analyzed using cancer potency factors for benzo(a)pyrene [B(a)P], which provides a conservative health impact estimation.

Table 1: Risk Assessment Health Values for Substances of Potential Concern

Compound (CAS Number)	Cancer Risk		Non-cancer Effects	
	Inhalation Cancer Potency $(mg/kg\text{-}day)^{-1}$	Inhalation Unit Risk $(\mu g/m^3)^{-1}$	Chronic Inhalation Reference Exposure Level $(\mu g/m^3)$	Acute Inhalation Reference Exposure Level $(\mu g/m^3)$
PAH (50328)[1]	3.9E+00	1.1E-03	--	--
Naphthalene (91203)	1.2E-01	3.4E-05	9.0E+00	--
Diesel Particulate Matter (9901)	1.1E+00	3.0E-04	5.0 E+00	--

Source: OEHHA, 2008

1. Benzo(a)pyrene (CAS number shown) was modeled as a surrogate carcinogen for all PAH emissions.

2.3 Risk Definitions and Significance

Cancer Risk. Cancer risk is the probability or chance of contracting cancer over a human life span, which is assumed to be 70 years. Carcinogens are not assumed to have a threshold below which there would be no human health impact. In other words, any exposure to a carcinogen is assumed to have some probability of causing cancer; the lower the exposure, the lower the cancer risk (i.e., a linear, no-threshold model). Under various state and local regulations, an incremental cancer risk of 10-in-one-million due to a project is considered to be a significant impact on public health. For example, the 10-in-one-million risk level is used by the Air Toxics "Hot Spots" (AB2588) program and California's Proposition 65 as the public notification level for air toxic emissions from existing sources. The SJVAPCD modeling guidance states that for permitting purposes, health risk impacts above 10-in-one-million are considered significant.

Non-Cancer Risk. Non-cancer health impacts can results from short-term (acute) or long-term (chronic) exposure to chemical substances. In determining potential non-cancer health risks from air toxics, it is assumed that there is a dose of the chemical of concern below which there would be no impact on human health. The air concentration corresponding to this dose is called the REL. Non-cancer health risks are measured in terms of a hazard index (HI), which is the calculated exposure of each contaminant divided by its REL. Hazard indices for those pollutants affecting the same target organ are typically summed, with the resulting totals expressed as hazard indices for each organ system. Similar to cancer risk, non-cancer impacts also have determined significance thresholds based on the estimated HI for the project.

The SJVAPCD modeling guidance allows for an incremental HI of less than 1.0 is considered to be an insignificant health risk.

Chronic toxicity is defined as adverse health effects from prolonged chemical exposure, caused by chemicals accumulating in the body. Because chemical accumulation to toxic levels typically occurs slowly, symptoms of chronic effects usually do not appear until long after exposure commences. The lowest no-effect chronic exposure level for a non-cancer air toxic is the chronic REL. Below this threshold, the body is capable of eliminating or detoxifying the chemical rapidly enough to prevent its accumulation. The chronic hazard index was calculated using the hazard indices calculated with model-predicted annual concentrations.

Acute toxicity is defined as adverse health effects caused by a short-term chemical exposure of no more than 24-hours. Short-term impacts were not evaluated in this HRA because TACs emitted from the proposed project do not have acute toxicity factors published to evaluate exposure.

CEQA Significance Criteria for Health Impacts. California has not established state-wide significance thresholds for cancer and non-cancer health risk impacts under CEQA. However, most air districts in California have adopted local significance thresholds for health risks in their policy guidance to project proponents. The SJVAPCD modeling guidance defines CEQA HRA significance thresholds for cancer health impacts as equal to or greater than 10 (cases) in a million and a significance thresholds for non-cancer health impacts as equal to or greater than a HI of 1.0.

3.0 Exposure Assessment and Risk Characterization

This section describes the information related to the air dispersion modeling process used to estimate ground-level concentrations of TACs emitted from the proposed project. Evaluation of potential health risks from the proposed development was conducted in accordance with the procedures described in the SJVAPCD modeling guidance for facilities with predominant DPM emissions.

3.1 Toxic Air Contaminant Emissions

3.1.1 Particulate Matter from Diesel-Fueled Engines

As discussed earlier, the potential health risk impact from the operation of the proposed development will be from diesel-fueled internal combustion engines. Operations contributing to DPM include haul truck travel and truck idling as shown in Table 2. Emission estimates were determined based on emission factors specified in the SJVAPCD modeling guidance. Detailed emission calculations are provided in Appendix A.

A maximum of 20 truck trips per day were assumed for the proposed development for the purpose of quantifying emissions. The emission factors specified in Appendix A of the SJVAPCD Guidance for use in conducting CEQA health risk assessments were used to determine particulate emissions generated by delivery trucks. Distances (in feet) used to estimate emissions from truck travel were determined based on site layout including the length of building side delivery lanes and other truck lanes. For emission estimation purposes, approximately 15 trucks per day are assumed to move through the north site and 5 trucks per day through the central site. A transportation refrigeration unit (TRU) is assumed to service the market at the south site once a week and the idling emissions from the TRU are calculated per SJVAPCD guidance. In accordance with the SJVAPCD modeling guidance, emissions from vehicles occurring on the roads or highways were not considered in this analysis.

Table 2: Emissions of Particulate Matter from Diesel-Fueled Engines				
Emission Source	**Emission Source Description**	**Average Emission Rates**		
		Hourly Emissions (lbs/hr)	**Daily Emissions (lbs/day)**	**Annual Emissions (lbs/year)**
	Truck Travel			
North1	North site truck travel - no bldg line	0.0001875~~0.0004~~	0.0045	1.6428
North2	North site truck travel - bldg line	0.0003888~~0.0008~~	0.0093	3.4061
North3	North site truck travel - no bldg line	0.0002133~~0.0004~~	0.0051	1.8688
~~South1~~Central1	~~South~~ Central site truck travel - no bldg line	8.163E-05~~0.0002~~	0.0020	0.7150
~~South2~~Central2	~~South~~ Central site truck travel - bldg line	4.626E-05~~0.0001~~	0.0011	0.4052
~~South3~~Central3	~~South~~ Central site truck travel - no bldg line	2.848E-05~~0.0001~~	0.0007	0.2495
	Subtotal	**0.0009**~~0.0019~~	0.0227	8.2875
	Truck Idle			
IDL_NM3	Haul truck idling at delivery dock	4.918E-05~~0.0001~~	0.0012	0.4308
IDL_NM4	Haul truck idling at delivery dock	4.918E-05~~0.0001~~	0.0012	0.4308
IDL_NM5	Haul truck idling at delivery dock	4.918E-05~~0.0001~~	0.0012	0.4308
IDL_NM6	Haul truck idling at delivery dock	4.918E-05~~0.0001~~	0.0012	0.4308
IDL_NM7	Haul truck idling at delivery dock	4.918E-05~~0.0001~~	0.0012	0.4308
IDL_SM1	Haul truck idling at delivery dock	4.918E-05~~0.0001~~	0.0012	0.4308
IDL_SM2	Haul truck idling at delivery dock	4.918E-05~~0.0001~~	0.0012	0.4308
IDL_SM3	Haul truck idling at delivery dock	4.918E-05~~0.0001~~	0.0012	0.4308
IDL_SA1	TRU idling at delivery dock	0.0002486~~0.0419~~	0.0419	2.1781
	Subtotal	**0.0006**~~0.0427~~	0.0513	5.6248
Grand Total		**0.0016~~0.0446~~**	**0.0740**	**13.9123**

3.1.2 Organic Gases (PAH and Naphthalene)

The PAH and naphthalene emissions from the nine onsite restaurants were based on emission provided for four types facilities [Type 1: CD-Charbroiler (86% control); Type 2: Flat Griddle (0% control); Type 3: UF-Charbroiler (0% control); Type 4: Flat Griddle (0% control)] in the SJVAPCD modeling guidance. The guidance recommends that facilities with more than four restaurants base the emissions of four restaurants on the emission factors identified for the four types, and the emissions for all the remaining restaurants on Type 4: Flat Griddle emission factors. PAH emissions were evaluated using [B(a)P] as the surrogate carcinogen. Since B(a)P is one of the most potent carcinogens in the PAH class, use of this cancer potency factor with total emissions will overestimate the risk. Table 3 shows the emissions from the restaurant operations.

Table 3: Emissions of PAH and Naphthalene from Fast Food/Restaurant Operations					
		Emissions[1]			
Restaurants	Location	Annual (lbs/yr)		Hourly (lbs/hr)	
TAC		PAH	Naphthalene	PAH	Naphthalene
CAS		50328	91203	50328	91203
N-P1	North	2.55E-03	1.51E-01	2.91E-07	1.73E-05
N-P2	North	7.57E-04	1.70E-01	8.64E-08	1.94E-05
N-P3	North	6.66E-03	3.35E-01	7.61E-07	3.82E-05
N-P4	North	2.52E-04	5.72E-02	2.87E-08	6.53E-06
S-P1	Central	2.52E-04	5.72E-02	2.87E-08	6.53E-06
S-P2	Central	2.52E-04	5.72E-02	2.87E-08	6.53E-06
S-P3	Central	2.52E-04	5.72E-02	2.87E-08	6.53E-06
S-P4	South	2.52E-04	5.72E-02	2.87E-08	6.53E-06
S-P5	South	2.52E-04	5.72E-02	2.87E-08	6.53E-06
	Total	**1.15E-02**	**9.99E-01**	**1.31E-06**	**1.14E-04**

[1]SJVAPCD Modeling Guidance, Fast Food Emissions

3.2 Dispersion Modeling Methodology

Concentrations of TACs in ambient air are estimated from mass emissions through use of air dispersion modeling analysis. Air concentrations resulting from the potential emissions were estimated using the methodology provided in the SJVAPCD modeling guidance, and good modeling practice. This section presents the methods used to conduct the air dispersion modeling analysis for estimating concentrations of TACs.

3.2.1 Air Dispersion Model

This health risk assessment used U.S EPA approved AERMOD dispersion model (version 07026~~5.8.0~~) to determine ground-level air concentrations. AERMOD was used in the rural mode with all model option switches set to regulatory-default settings. Modeling was performed using a Universal Transverse Mercator (UTM), zone 10 NAD83 datum coordinate system.

AERMOD was used exclusively for the evaluation of cancer risk impacts from DPM emissions. Because DPM emissions were evaluated as a single pollutant in AERMOD, actual emission rates from each emission source were modeled in the dispersion analysis. Dispersion modeling of emissions from the fast-food restaurants were also modeled in AERMOD with a normalized ("unit") emission rate to later use with the actual emission rates for risk characterization in Hotspots Analysis Reporting Program (HARP).

The HARP software package (Version 1.4a, updated September 2008) developed by the ARB for conducting health risk assessments in California under the Air Toxics Hot Spots Program was used to evaluate potential health risk due to PAH and naphthalene emissions from the operation of the restaurants. HARP On-Ramp (version 1) which allows use of AERMOD modeling files with HARP was used to prepare HARP required files from AERMOD dispersion modeling files. The PAH and naphthalene emissions from the restaurant are multi-pathway pollutants that impact public health through multiple pathways including inhalation, dermal, and oral exposure routes. Therefore, a multi-pathway HRA was conducted in HARP for the restaurant emissions. The total health impact from the project was calculated as a sum of risk from DPM and restaurant operations at the identified receptors.

3.2.2 Meteorological Data

The modeling analysis used five years (2000-2004) of sequential hourly meteorological data to determine the highest annual concentrations for use in the HRA. The meteorological data sets were developed by the SJVAPCD for use in air dispersion modeling studies using AERMOD. The meteorological data was obtained from the SJVAPCD website for the Stockton monitoring station. The analysis showed that meteorological data for the year 2002 produced the highest annual impacts from emission sources at the proposed development. A wind rose for the Stockton meteorological station for the year 2002 is presented in Figure 2.

3.2.3 Modeled Source Release Parameters

In accordance with the SJVAPCD modeling guidance, emissions from truck idling were modeled as vertical point source releases and emissions from truck travel were modeled as volume sources. Figure 3 shows modeled emission sources for the facility. Table 4 summarizes the modeled release parameters for the emission sources evaluated in the HRA.

Figure 1: Union Crossing Commercial Development Site Plan

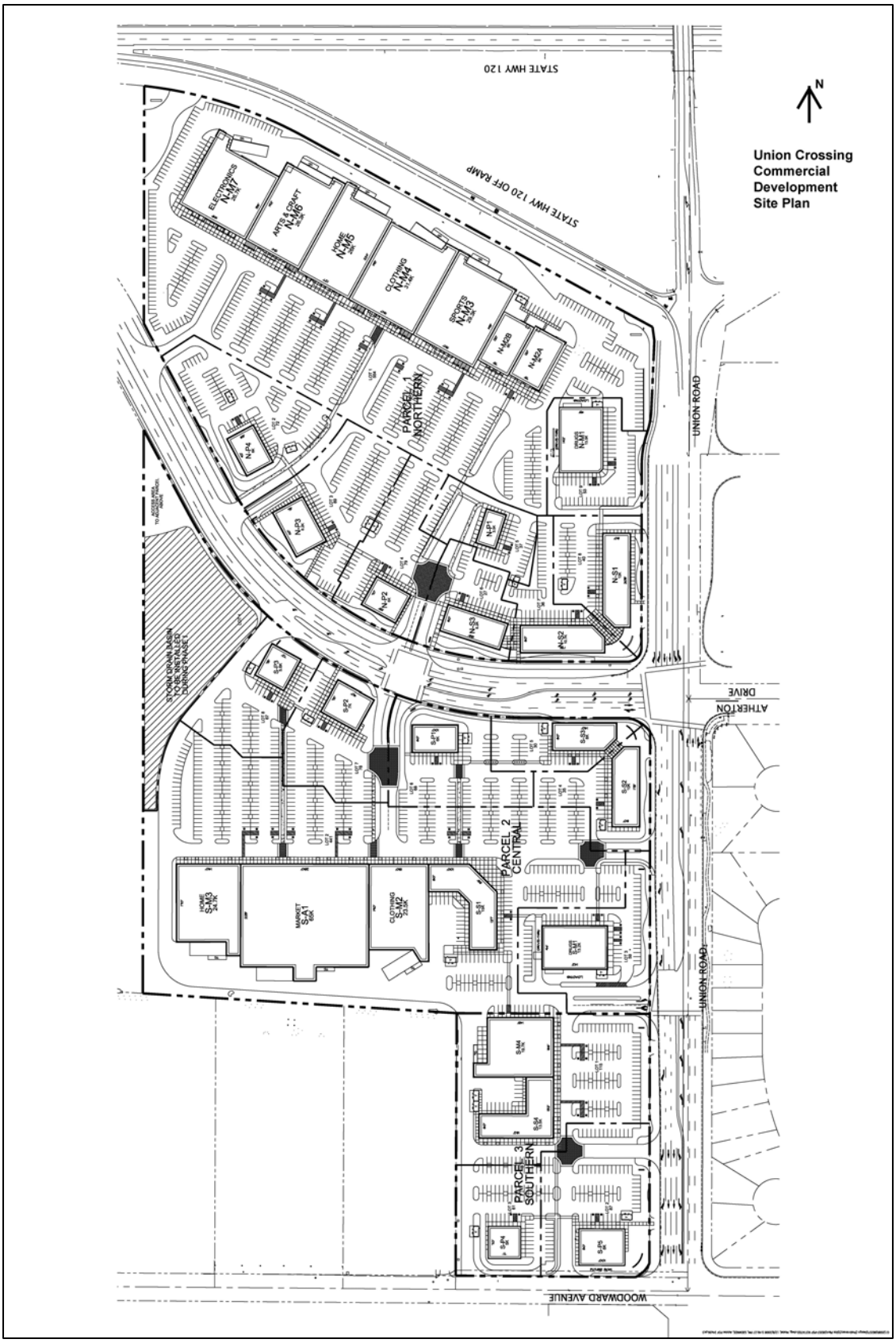


Figure 2: Wind-rose for Stockton Meteorological Station (Year 2002)

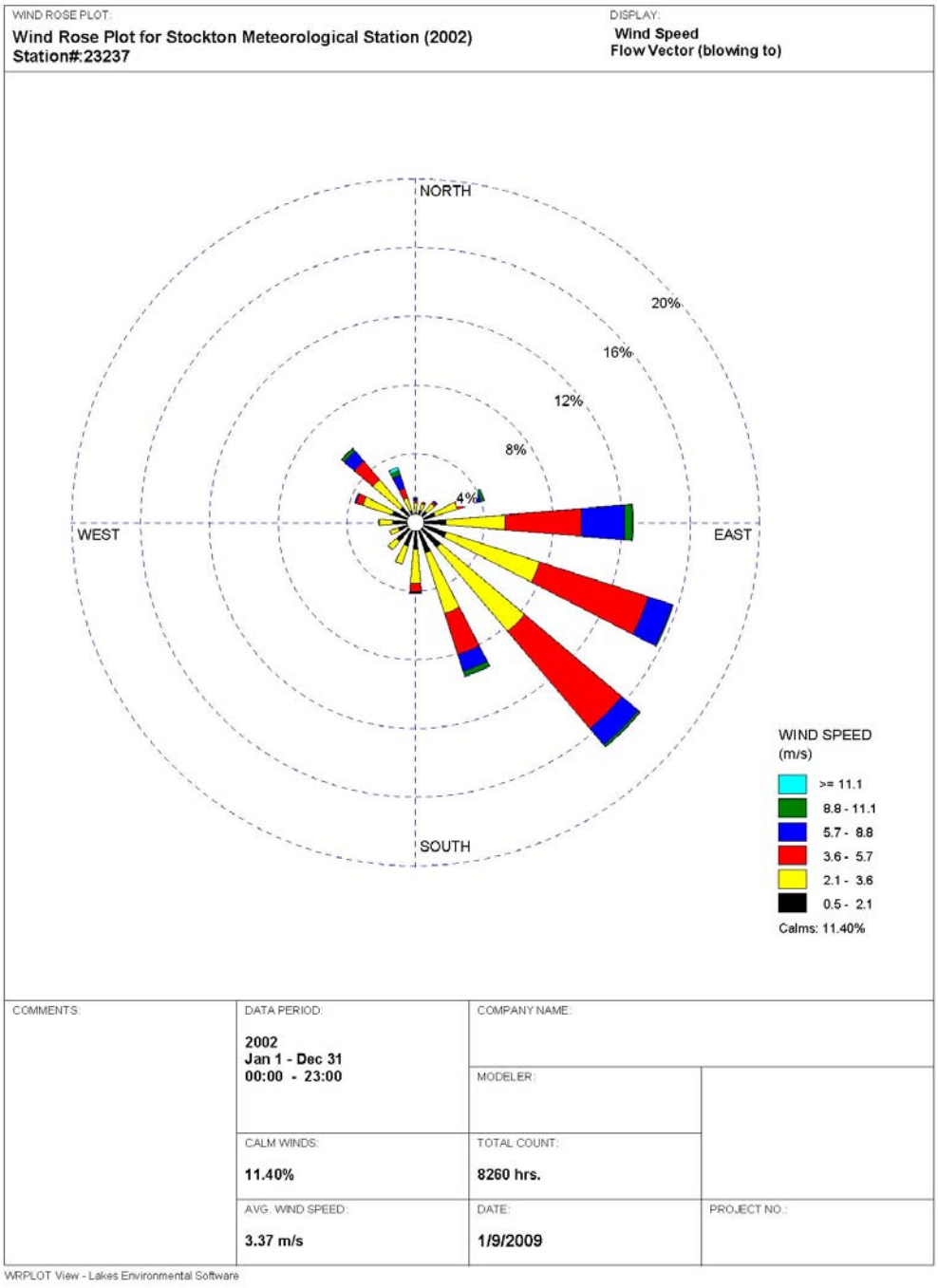
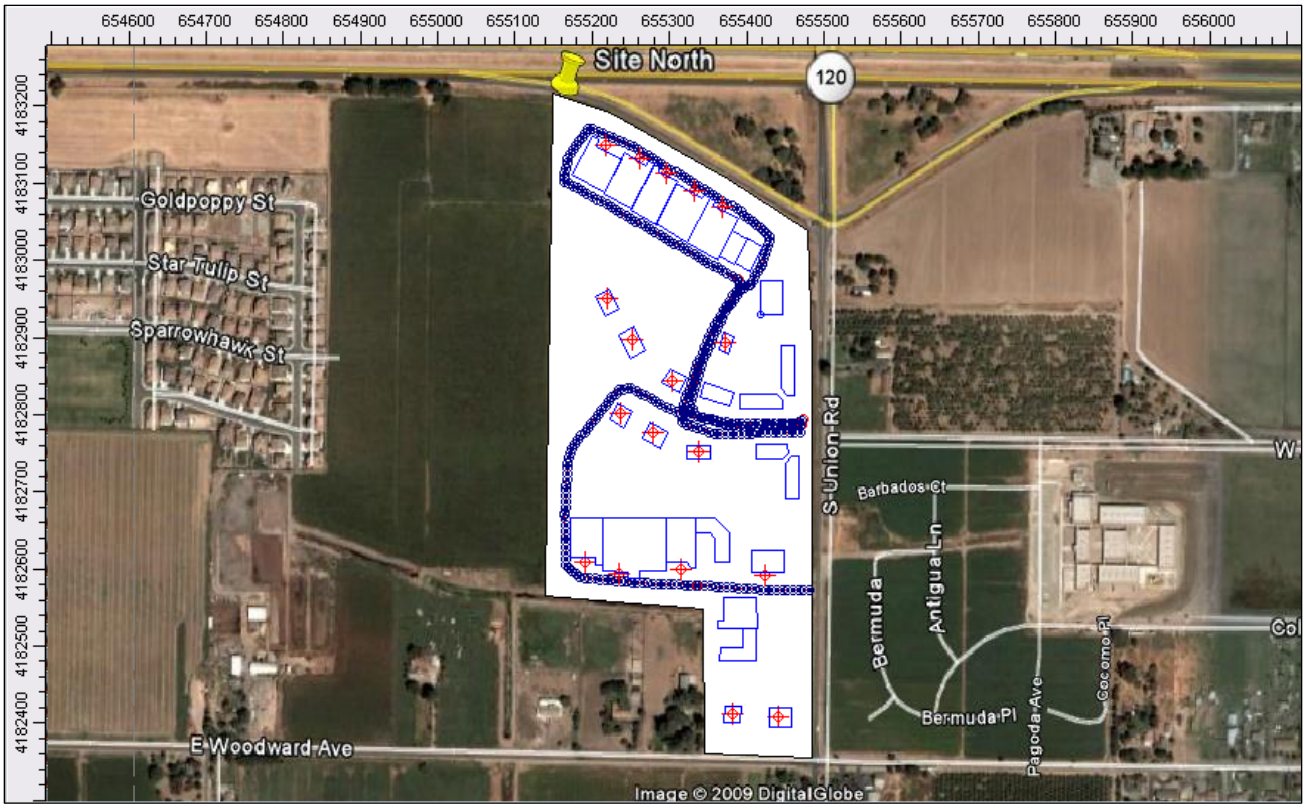


Figure 3: Modeled Emission Sources



Legend: Blue line represents line sources which are modeled as volume sources in AERMOD. The line source represents the truck travel path around the sites. Red symbols represent point sources. Point sources include idling at delivery areas and nine restaurant emissions.

Table 4: Modeled Release Parameters for Emission Sources								
Source	**Description**	**Source Type**	**Release Height (ft)**	**Length of Side (ft)**	**Temperature (K)**	**Release Velocity (m/sec)**	**Vertical Dimension (ft)**	**Stack Diameter (ft)**
North1	North site truck travel	Line[a]	6	12	-	-	6	-
North2	North site truck travel - bldg line	Line[a]	6	12	-	-	15[b]	-
North3	North site truck travel	Line[a]	6	12	-	-	6	-
~~South1~~Central1	~~South~~ Central site truck travel	Line[a]	6	12	-	-	6	-
~~South2~~Central2	~~South~~ Central site truck travel - bldg line	Line[a]	6	12	-	-	15[b]	-
~~South3~~Central3	~~South~~ Central site truck travel	Line[a]	6	12	-	-	6	-
IDL_NM3	Haul truck idling at delivery dock	Point	12.6	-	366	51.71	-	0.33
IDL_NM4	Haul truck idling at delivery dock	Point	12.6	-	366	51.71	-	0.33
IDL_NM5	Haul truck idling at delivery dock	Point	12.6	-	366	51.71	-	0.33
IDL_NM6	Haul truck idling at delivery dock	Point	12.6	-	366	51.71	-	0.33
IDL_NM7	Haul truck idling at delivery dock	Point	12.6	-	366	51.71	-	0.33
IDL_SM1	Haul truck idling at delivery dock	Point	12.6	-	366	51.71	-	0.33
IDL_SM2	Haul truck idling at delivery dock	Point	12.6	-	366	51.71	-	0.33
IDL_SM3	Haul truck idling at delivery dock	Point	12.6	-	366	51.71	-	0.33
IDL_SA1	TRU idling at delivery dock	Point	13	-	501	49	-	0.13
NP1	Restaurant/Fast food	Point	35	-	294	6.14	-	1
NP2	Restaurant/Fast food	Point	35	-	294	6.14	-	1
NP3	Restaurant/Fast food	Point	35	-	294	6.14	-	1
NP4	Restaurant/Fast food	Point	35	-	294	6.14	-	1
SP1	Restaurant/Fast food	Point	35	-	294	6.14	-	1
SP2	Restaurant/Fast food	Point	35	-	294	6.14	-	1
SP3	Restaurant/Fast food	Point	35	-	294	6.14	-	1
SP4	Restaurant/Fast food	Point	35	-	294	6.14	-	1
SP5	Restaurant/Fast food	Point	35	-	294	6.14	-	1

a. Line source represented by adjacent volume sources.
b. Elevated release next to buildings. Building heights assumed to be 30 ft.

3.2.5 Building Downwash

The latest version of the USEPA Building Profile Input Program (BPIP-PRIME) was run to determine dominant structures for building downwash calculations run in AERMOD for point sources. Direction specific building heights and widths of the dominant downwash structure(s) were included in the AERMOD model data input file directly from BPIP-PRIME results. Building downwash was also modeled for evaluating emissions from the restaurant.

3.2.5 Terrain

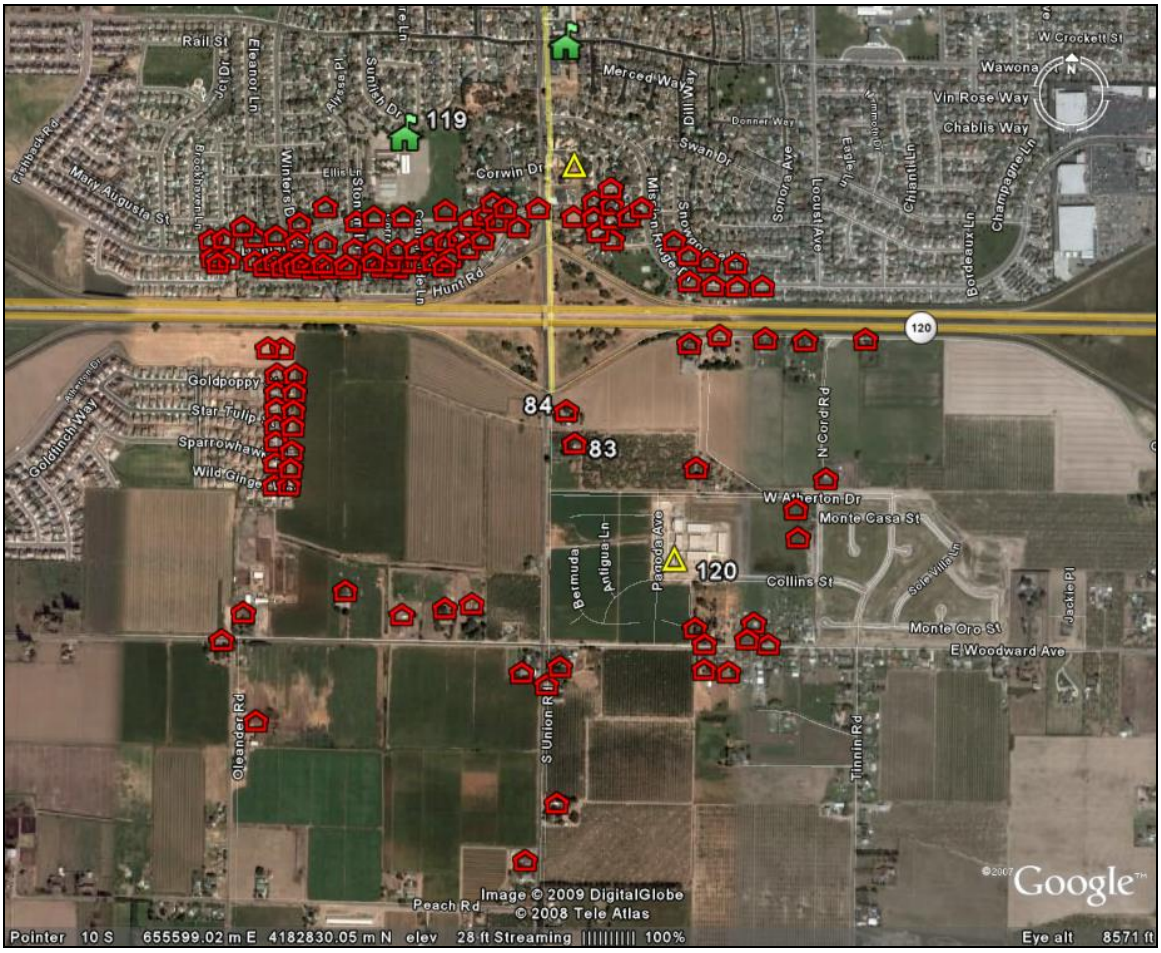
The terrain surrounding the proposed site is primarily flat agricultural land. Due to the relative flatness of terrain, and that no point source has high plume rise, terrain was not applicable to the air dispersion modeling analysis.

3.2.6 Receptors

Modeled receptors were placed at locations of potential human exposure to identify the maximum exposed individual at an existing residential receptor (MEIR), and the maximum exposed individual at an existing occupational worker receptor (MEIW). In addition, sensitive receptors, locations were a sensitive population segment such as children, elderly, or the infirmed may be exposed were also identified and modeled.

A network of 117 residential receptors were identified and modeled to determine the MEIR near the proposed facility. Residential receptors included existing residences located primarily to the west and north of the proposed project. A few residences were also identified to the south and east of the project site. Four occupational receptors were modeled to determine the MEIW. Two schools were identified within 1-km of the facility and were evaluated health risks using both child exposure factors to assess child impacts, and as an occupational receptor to assess adults working at the schools. Figure 4 shows a map of receptors evaluated in this HRA. Since the maximum impacts occur close to the facility, impacts at receptors located farther than the ones evaluated should be lower than the estimated impacts.

Figure 4: Modeled Receptors on Aerial Photograph of Area



Legend: Orange symbols represent residential receptors; Green symbols represent school receptors; Yellow symbols represent worker receptors. The receptor locations with maximum impacts are labeled. The cancer MEIR is at receptor 84; the chronic MEIR is at receptor 83; the cancer and chronic MEIW occurs at receptor 120; and the MEIC occurs at receptor 119.

3.3 Risk Characterization

Risk characterization was performed in accordance with the SJVAPCD modeling guidance for facilities with dominant DPM emissions. The guidance suggests the calculation of DPM cancer using equation below after AERMOD is employed to calculate the ground-level concentrations.

$$\textbf{Cancer Risk} = (SF \times C_{air} \times DBR \times A \times EF \times ED \times 10^{-6})/AT$$

Where,

SF, DPM Slope Factor	1.1 $(mg/kg\text{-}day)^{-1}$
C_{air}, modeled concentration of DPM	ug/m^3
EF, Exposure Frequency (Residential Receptors)	350 (days/year)
ED, Exposure Duration (Residential Receptors)	70 (years)
DBR, Daily Breathing Rate (Adult)	393 (liter/kg-day)
AT, Averaging time	25550 (days)
Conversion factor	10^{-6}
A	1

The assumptions shown above are for residential receptor locations. The cancer risk for offsite workers were calculated for an exposure duration of 40 years and a daily breathing rate of 149 liter/kg-day. Child cancer risk was modeled at a 9-year exposure duration and higher daily breathing rate of 581 liter/kg-day. SJVAPCD modeling guidance does not require the chronic HI calculation for DPM.

The SJVAPCD modeling guidance requires other TAC sources in the facility be modeled separately in HARP. Carcinogenic risk and chronic non-carcinogenic health effects from PAHs and naphthalene from restaurant operations were assessed by first running HARP On-Ramp to prepare files for HARP from the AERMOD modeling files. The AERMOD predicted annual average concentrations were then used with the latest OEHHA cancer potency factors, and chronic RELs (OEHHA, 2008) to characterize risk. The approved health values are incorporated into HARP Version 1.4a.

The modeled exposure pathways consisted of homegrown produce, dermal absorption, and soil ingestion in addition to the inhalation pathway. The following HARP modeling options were used for the risk analysis to estimate cancer and non-cancer impacts at the maximum exposed points.

- 70-year Resident Cancer Risk – Derived (Adjusted) Method
- Worker Cancer Risk – Point Estimate
- Chronic Hazard Index – Derived (OEHHA) Method
- 9-year (child resident) Cancer Risk – Derived (OEHHA) Method

4.0 Health Risk Assessment Results

The HRA evaluated cancer risk and chronic non-cancer health effects at specific nearby locations where people may experience an actual exposure. Carcinogenic risks and potential chronic non-cancer health effects were assessed using the dispersion modeling and numerical values of toxicity provided by OEHHA/ARB as described in the preceding sections. The multi-pathway health risk assessment evaluated cancer and non-cancer health effects at individual residential, occupational, and sensitive receptors. As stated earlier, because the pollutants of concern do not have published toxicity factors for short-term (acute) exposure, this HRA evaluated only potential long-term health impacts.

Health risk impacts were identified at actual locations of residential, occupational and sensitive receptors. A summary of maximum cancer risk and non-cancer health impacts values is shown in Table 5. Results of the health risk assessment are discussed below.

Table 5: Summary of Maximum Health Risk Impacts by Individual Receptor

Receptor Type	Health Risk Impact	
	Cancer Risk (per million)	Non-Cancer Chronic HI
Residential Receptors		
Maximum Exposed Individual Resident (MEIR)	2.3	0.00001
Occupational Receptors		
Maximum Exposed Individual Worker (MEIW)	0.1	4.48E-06
School Receptors		
Maximum Exposed Individual Child (MEIC)	0.1	--

Significance Threshold	**10**	**1**

The cancer risk (expressed in cases per million) shown in the table above is the total cancer risk from DPM, PAHs and naphthalene. The cancer risk for residential receptor is based on a 70-year exposure, while the cancer risk for worker receptors is based on a 40-year adjusted worker exposure in accordance with OEHHA. The cancer risk for school receptors is based on a 9-year student exposure using inhalation and body weight factors developed by OEHHA for children.

Of the 118 residential locations identified for evaluating maximum individual health risk impacts, cancer risk at the MEIR was determined to be 2-in-one-million. The non-cancer chronic HI at the MEIR was determined to be 0.00001. The maximum predicted residential risks are below the significance criteria for the proposed project. Four off-site worker locations were identified for evaluating maximum individual health risk impacts at the MEIW. Cancer risk and the non-cancer chronic HI at the MEIW were determined to be very insignificant. The impacts at the MEIW are below the significance criteria for the proposed project. The child exposure cancer risk at the sensitive receptor (school) was estimated as 0.1-in-one-million which is also below the significance threshold. The maximum impact locations are presented in Figure 4.

Estimated cancer risks and non-cancer chronic HI at all receptors evaluated in this HRA were determined to be less than the SJVAPCD significance levels of 10-in-one-million and 1.0, respectively. Detailed health risk calculations are provided in Appendix B.

5.0 Risk Assessment Uncertainty

Sources of uncertainty in the assessment of risks to public health include emissions estimates, dispersion modeling, exposure characteristics, and extrapolation of toxicity data in animals to humans. To address this uncertainty, highly conservative assumptions were used in this risk assessment, as discussed below.

Emissions. There are inherent uncertainties in the quantification of emissions from truck travel and idling activities. Emission factors based on the SJVAPCD modeling guideline for truck emissions are based on mobile “on-road” diesel engines (vehicle engines in haul trucks) developed from the ARB on-road emissions factor model (EMFAC). These composite factors include older and newer engines with newer engines designed with cleaner, more fuel-efficient combustion technology.

Air Dispersion Modeling. In general, U.S.EPA dispersion models such as AERMOD are designed to generally to over-predict concentrations rather than under-predict. For example, the model algorithms assume chemical emissions are not transformed in the atmosphere into other chemical compounds. For certain pollutants, conversion may occur quickly enough to reduce concentrations from the conservative model predictions.

Exposure Assessment. The most important uncertainties related to exposure include the definitions of exposed populations and their exposure characteristics. The chief exposure assumption is one of continuous exposure to the TAC concentrations produced by continuous emissions at the maximum emission rates over a 70-year period at each receptor location. The choice of a "residential" maximally exposed individual is very conservative in the sense that no real person is likely to spend 24 hours a day, 365 days a year over a 70-year period at exactly the point of highest toxicity-weighted annual average air concentration. The actual risks are not expected to be any higher than the predicted risks and are likely to be substantially lower. The averaging time for the cancer risk estimate is usually 70 years, which is

used to represent a lifetime exposure. An additional conservative assumption was the use of the OEHHA-defined 95th percentile breathing rate of 393 liters of air/kg-day.

Toxicity Assessment. Another area of uncertainty is in the use of toxicity data in risk estimation. Estimates of toxicity for the health risk assessment obtained from OEHHA are conservative compilations of toxicity information. Toxicity estimates are derived either from observations in humans or from projections derived from experiments with laboratory animals. When toxicity estimates are derived from animal data, they usually involve extra safety factors to account for possibly greater sensitivity in humans, and the less-than-human-lifetime observations in animals. Overall, the toxicity assumptions and criteria used in the proposed project risk assessment are biased toward over-estimating risk. The amount of the bias is unknown, but could be substantial.

Diesel Particulate Cancer Potency Factor. The diesel exhaust cancer potency factor is a best-estimate value established by the ARB Scientific Review Panel (SRP) based on review of more than 30 diesel exposure studies. The established potency risk factor is a 95th percentile upper confidence limit value, implying that there is only a 5% chance that the value is underestimated (too low). In addition, the most significant of the studies reviewed by the SRP are occupational studies of exposure of diesel exhaust by railroad workers. The occupational results were then extrapolated to the general population, which includes more sensitive individuals than healthy railroad workers.

6.0 REFERENCES

California Air Pollution Control Officers Association (CAPCOA), 1993. Air Toxics "Hot Spots" Program: Revised 1992 Risk Assessment Guidelines.

California ARB, 2008. HARP Version 1.4a, July.

Office of Environmental Health Hazard Assessment (OEHHA), 2008. Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values, June.

OEHHA, 2003. Air Toxics Hotspots Program Guidance Manual for Preparation of Health Risk Assessments. August.

San Joaquin Valley Air Pollution Control District (SJVAPCD), 2006. Guidance for Air Dispersion Modeling, Appendix A, 2.0 CEQA Health Risk Assessments. July.

Appendix A

Detailed Emission Calculations

Table A-1: Truck Running Emissions Summary				
Source ID	**Description**	**Emissions**		
		(lbs/hr)	**(lbs/day)**	**(lbs/year)**
North1	North site truck travel - no bldg line	3.75E-04	4.50E-03	1.64E+00
North2	North site truck travel - bldg line	7.78E-04	9.33E-03	3.41E+00
North3	North site truck travel - no bldg line	4.27E-04	5.12E-03	1.87E+00
Central1	Central site truck travel - no bldg line	1.63E-04	1.96E-03	7.15E-01
Central2	Central site truck travel - bldg line	9.25E-05	1.11E-03	4.05E-01
Central3	Central site truck travel - no bldg line	5.70E-05	6.84E-04	2.50E-01

Truck Running Emissions

General Assumptions:

Project Generated Trips[1]:	20	trucks/day
Daily Operation[2]:	12	hrs/day

Emission Factor:

Haul Truck Emission Factor [3]	0.670	g/mile

Emission Calculation:

Truck Running Emissions - North Site

North site truck travel - no bldg line

Average Travel Distance[4]:	1073	feet/truck trip
Average Daily Truck Trips:	15	truck trips/day
Daily Travel Distance:	3	miles/day
Travel Rate:	0.2539	miles/hour
Emission Rate[5]:	0.000375	lbs/hr

North site truck travel - bldg line

Average Travel Distance[4]:	2224	feet/truck trip [3]
Average Daily Truck Trips:	15	truck trips/day
Daily Travel Distance:	6	miles/day
Travel Rate:	0.5265	miles/hour
Emission Rate[5]:	0.000778	lbs/hr

North site truck travel - no bldg line

Average Travel Distance[4]:	1220	feet/truck trip [3]
Average Daily Truck Trips:	15	truck trips/day
Daily Travel Distance:	3	miles/day
Travel Rate:	0.2889	miles/hour
Emission Rate[5]:	0.000427	lbs/hr

Table A-1: Truck Running Emissions Summary

Truck Running Emissions - Central Site

Central site truck travel - no bldg line		
Average Travel Distance[4]:	1401	feet/truck trip [4]
Average Daily Truck Trips:	5	truck trips/day
Daily Travel Distance:	1	miles/day
Travel Rate:	0.1105	miles/hour
Emission Rate[5]:	0.000163	lbs/hr [5]
Central site truck travel - bldg line		
Average Travel Distance[4]:	794	feet/truck trip [4]
Average Daily Truck Trips:	5	truck trips/day
Daily Travel Distance:	1	miles/day
Travel Rate:	0.0626	miles/hour
Emission Rate[5]:	0.000093	lbs/hr [5]
Central site truck travel - no bldg line		
Average Travel Distance[4]:	489	feet/truck trip [4]
Average Daily Truck Trips:	5	truck trips/day
Daily Travel Distance:	0	miles/day
Travel Rate:	0.0386	miles/hour
Emission Rate[5]:	0.000057	lbs/hr [5]

[1] A maximum of 20 trucks trips is assumed, of which 15 trucks trips are assumed for the north site and 5 for the central site.

[2] Truck travel are expected to occur daily.

[3] SJVAPCD Modeling Guidance, Emission Factor for Truck Travel.

[4] Travel distance determined by calculating the shortest delivery truck route distance.

[5] Average hourly emission estimates are the product of the average truck miles/hour and the emission factor for DPM, in units of grams/mile, converted to pounds.

Average hourly emission rate = 0.2539 miles/hour * 0.67 grams/mile / 453.6 grams/pound
= 0.000375 pounds/hour

Average annual emission rate = 0.000375 pounds/hour * 12 hours/day * 365 days/year
= 1.64 pounds/year

Table A-2: Truck Idling Emissions Summary

Source	Emissions (lbs/hour)	Emissions (lbs/day)	Emissions (lbs/year)
Total Haul Truck Idling	7.87E-04	9.44E-03	3.45E+00
Haul Truck Idling Emissions at Each Delivery Bay (8 stations)	9.84E-05	1.18E-03	4.31E-01
TRU Idling	4.19E-02	4.19E-02	2.18E+00

Total Haul Truck Idling Emissions

General Assumptions:

Project Generated Trips[1]:	20	truck trips/day
Daily Operation[2]:	12	hrs/day [1]

Emission Factor:

Haul Truck Emission Factor [3]	2.57	g/idle-hr

Emission Calculation:

Engine Idle[4]:	5	minutes/idle
Idle rate:	100	idle-minutes/day
Hourly Idle Rate[5]:	0.139	idle-hrs/hr [4]
Total Emission Rate[6]:	0.0008	lbs/hr [5]
	0.0094	lbs/day
	3.45	lbs/year
Truck Idling Emissions at each delivery bay (8 bays)[7]	0.0001	lbs/hr
	0.0012	lbs/day
	0.43	lbs/year

Transportation Refrigeration Unit (TRU) Idling Emissions

Engine HP[8]	50	bhp
Operating Time[8]	0.5	hr/trip
	0.5	hr/day
Operation Frequency[8]	1	trip/week
	52	trips/year

Emission Factor:

TRU Emission Factor[8]	0.76	g/bhp-hr
	38	g/hr

Emission Calculation:

Emission Rate[9]:	0.0419	lb/day
	0.04	lb/hr
	2.18	lb/year

[1] A maximum of 20 trucks trips is assumed, of which 15 trucks trips are assumed for the north site and 5 for the central site.

[2] Truck travel are expected to occur daily.

[3] SJVAPCD Modeling Guidance, Emission Factor for Truck Travel.

[4] Engine idle time based on state ATCM of 5 minutes for heavy duty trucks.

[5] Average hours of truck idling per hour is a ratio of idling hours per hour of operation (100 idle minutes/day / 60 minutes/hour / 12 hours/day).

[6] Average emissions equals the average hourly idle rate (idle-hrs/hr) multiplied by the SJVAPCD emission factor for DPM emissions from truck idling (grams/idle-hr), converted to pounds.

Average hourly emission rate = 0.139 idle-hrs/hour * 2.57 grams/mile / 453.6 grams/pound
= 0.0008 pounds/hour

Average annual emission rate = 0.0008 pounds/hour * 12 hours/day * 365 days/year
= 3.45 pounds/year

[7] For modeling purposes, the idling emissions are equally divided between 8 delivery bays.

[8] SJVAPCD Modeling Guidance, Transportation Refrigeration Unit Emissions.

[9] Average emissions equals the SJVAPCD emission factor (gram/hr) multiplied by the hours of idling (0.5 hrs/day), converted to pounds. The TRU operates 0.5 hours per trip with 1 trip per week, i.e. the TRU operates 0.5 hours/day for a total of 52 weeks in a year.

Average daily emission rate = 38 grams/hour * 0.5 hr/day/ 453.6 grams/pound
= 0.04 pounds/day

Average annual emission rate = 0.04 pounds/day * 52 days/yr
= 2.18 pounds/year

Table A-3: Summary of Diesel Particulate Matter Emissions from Trucks						
Emission Source	Emission Source Description	Emission Rates				
		Maximum Hourly Emissions (lbs/hr)	Daily Emissions (lbs/day)	Annual Emissions (lbs/year)	Modeled Annualized Hourly Emissions (lb/hr)	Modeled Annual Emission Rate (g/s)
	Truck Travel					
North1	North site truck travel - no bldg line	3.75E-04	4.50E-03	1.64E+00	1.88E-04	2.36E-05
North2	North site truck travel - bldg line	7.78E-04	9.33E-03	3.41E+00	3.89E-04	4.90E-05
North3	North site truck travel - no bldg line	4.27E-04	5.12E-03	1.87E+00	2.13E-04	2.69E-05
Central1	Central site truck travel - no bldg line	1.63E-04	1.96E-03	7.15E-01	8.16E-05	1.03E-05
Central2	Central site truck travel - bldg line	9.25E-05	1.11E-03	4.05E-01	4.63E-05	5.83E-06
Central3	Central site truck travel - no bldg line	5.70E-05	6.84E-04	2.50E-01	2.85E-05	3.59E-06
	SubTotal	**0.0019**	**0.0227**	**8.2875**		
	Truck Idle					
IDL_NM3	Haul truck idling at delivery dock	9.84E-05	1.18E-03	4.31E-01	4.92E-05	6.20E-06
IDL_NM4	Haul truck idling at delivery dock	9.84E-05	1.18E-03	4.31E-01	4.92E-05	6.20E-06
IDL_NM5	Haul truck idling at delivery dock	9.84E-05	1.18E-03	4.31E-01	4.92E-05	6.20E-06
IDL_NM6	Haul truck idling at delivery dock	9.84E-05	1.18E-03	4.31E-01	4.92E-05	6.20E-06
IDL_NM7	Haul truck idling at delivery dock	9.84E-05	1.18E-03	4.31E-01	4.92E-05	6.20E-06
IDL_SM1	Haul truck idling at delivery dock	9.84E-05	1.18E-03	4.31E-01	4.92E-05	6.20E-06
IDL_SM2	Haul truck idling at delivery dock	9.84E-05	1.18E-03	4.31E-01	4.92E-05	6.20E-06
IDL_SM3	Haul truck idling at delivery dock	9.84E-05	1.18E-03	4.31E-01	4.92E-05	6.20E-06
IDL_SA1	TRU idling at delivery dock	4.19E-02	4.19E-02	2.18E+00	2.49E-04	3.13E-05
	SubTotal	**0.0427**	**0.0513**	**5.6248**		
Grand Total		**0.0446**	**0.0740**	**13.9123**		

Appendix B

Detailed Health Risk Calculations

Table B-1: Summary of Maximum Health Risk Impacts by Individual Receptor		
Receptor Type	**Health Risk Impact**	
	Cancer Risk	**Non-Cancer Chronic HI**
Residential Receptors		
Maximum Exposed Individual Resident (MEIR)	2.3	1.35E-05
Occupational Receptors		
Maximum Exposed Individual Worker (MEIW)	0.1	4.48E-06
School Receptors		
Maximum Exposed Individual Child (MEIC)	0.1	--
Significance Threshold	**10-in-one-million**	**1**

Table B-2: Facility Cancer Risk Results						
Residential Cancer Risk						
Receptor ID	**Receptor Type**	**Easting (m)**	**Northing (m)**	**Cancer Risk**		**Total Cancer Risk (per million)1**
				DPM	**PAH/ Naphthalene**	
1	Res	654835.0625	4182743.25	5.64E-07	4.41E-08	6.08E-07
2	Res	654838	4182787.5	5.76E-07	4.68E-08	6.23E-07
3	Res	654839.625	4182833.5	5.97E-07	5.06E-08	6.48E-07
4	Res	654839.625	4182896.5	6.22E-07	5.19E-08	6.74E-07
5	Res	654839.625	4182939	6.30E-07	6.38E-08	6.94E-07
6	Res	654840.4375	4182985	6.26E-07	7.32E-08	6.99E-07
7	Res	654841.25	4183031.75	6.18E-07	7.59E-08	6.94E-07
8	Res	654797.8125	4182742.5	5.14E-07	3.94E-08	5.53E-07
9	Res	654797.8125	4182801.5	5.18E-07	4.31E-08	5.61E-07
10	Res	654797	4182856.25	5.31E-07	4.50E-08	5.76E-07
11	Res	654795.375	4182898.25	5.39E-07	4.52E-08	5.84E-07
12	Res	654795.375	4182942.5	5.47E-07	5.54E-08	6.03E-07
13	Res	654794.5625	4182983.25	5.47E-07	6.25E-08	6.10E-07
14	Res	654793.75	4183030	5.43E-07	6.54E-08	6.08E-07
15	Res	654805.1875	4183096.5	5.51E-07	6.16E-08	6.13E-07
16	Res	654767.5	4183096.5	4.97E-07	5.72E-08	5.55E-07
17	Res	654725.375	4183321.75	3.98E-07	3.83E-08	4.36E-07
18	Res	654776.5625	4183323.5	4.39E-07	4.27E-08	4.82E-07
19	Res	654815.1875	4183320.75	4.77E-07	4.78E-08	5.25E-07
20	Res	654849	4183319.75	5.14E-07	5.15E-08	5.66E-07
21	Res	654903.125	4183320.75	5.80E-07	5.35E-08	6.34E-07
22	Res	654962	4183320.75	6.76E-07	5.60E-08	7.32E-07
23	Res	655033.5	4183331.25	7.88E-07	4.90E-08	8.37E-07
24	Res	655076	4183332.25	8.37E-07	4.52E-08	8.83E-07
25	Res	655118.5	4183332.25	8.50E-07	4.22E-08	8.92E-07
26	Res	655147.5	4183332.25	8.33E-07	4.11E-08	8.74E-07
27	Res	655189.0625	4183338	7.46E-07	3.66E-08	7.83E-07
28	Res	655235.4375	4183349.75	6.38E-07	2.98E-08	6.68E-07
29	Res	655279.8125	4183373.75	5.22E-07	2.38E-08	5.46E-07
30	Res	655316.5625	4183400	4.31E-07	1.99E-08	4.51E-07
31	Res	655351.3125	4183447.25	3.27E-07	1.67E-08	3.44E-07
32	Res	655372.5625	4183484	2.74E-07	1.51E-08	2.89E-07
33	Res	655339.1875	4183496.75	2.86E-07	1.45E-08	3.01E-07
34	Res	655318.6875	4183462.25	3.36E-07	1.63E-08	3.52E-07
35	Res	655282.0625	4183447.25	3.81E-07	1.87E-08	4.00E-07
36	Res	655253	4183404	4.77E-07	2.35E-08	5.00E-07
37	Res	655219.5625	4183391	5.31E-07	2.73E-08	5.58E-07
38	Res	655182.9375	4183391	5.72E-07	3.03E-08	6.02E-07
39	Res	655143.0625	4183367.5	6.88E-07	3.61E-08	7.24E-07
40	Res	655095.6875	4183365.25	7.25E-07	3.78E-08	7.63E-07
41	Res	655037.5	4183366.25	7.05E-07	4.19E-08	7.47E-07
42	Res	654983.625	4183363	6.47E-07	4.67E-08	6.93E-07
43	Res	654906.5625	4183375.25	5.35E-07	4.64E-08	5.81E-07
44	Res	654833.8125	4183373.5	4.56E-07	4.48E-08	5.01E-07
45	Res	654777.25	4183388.25	3.98E-07	4.14E-08	4.39E-07
46	Res	654722.3125	4183383.25	3.61E-07	3.67E-08	3.97E-07
47	Res	654656.0625	4183325	3.52E-07	3.49E-08	3.87E-07
48	Res	654614	4183326.75	3.27E-07	3.31E-08	3.61E-07
49	Res	654607.5625	4183372	3.03E-07	3.15E-08	3.34E-07
50	Res	654641.5	4183375.25	3.19E-07	3.23E-08	3.51E-07
51	Res	654690	4183409.25	3.32E-07	3.41E-08	3.66E-07
52	Res	654837.0625	4183425.25	4.27E-07	3.97E-08	4.67E-07
53	Res	654903.3125	4183469	4.48E-07	3.47E-08	4.82E-07
54	Res	654985.75	4183433.5	5.39E-07	3.49E-08	5.74E-07
55	Res	655031	4183448	5.22E-07	3.11E-08	5.53E-07
56	Res	655107	4183451.25	4.89E-07	2.79E-08	5.17E-07
57	Res	655216.875	4183470.5	3.86E-07	2.16E-08	4.07E-07
58	Res	655408.9375	4183435.75	3.03E-07	1.81E-08	3.21E-07
59	Res	655458.8125	4183485.75	2.45E-07	1.51E-08	2.60E-07
60	Res	655552	4183467	2.57E-07	1.49E-08	2.72E-07

Table B-2: Facility Cancer Risk Results						
Residential Cancer Risk						
Receptor ID	**Receptor Type**	**Easting (m)**	**Northing (m)**	**Cancer Risk**		**Total Cancer Risk (per million)1**
				DPM	**PAH/ Naphthalene**	
61	Res	655604.375	4183468.5	2.45E-07	1.44E-08	2.59E-07
62	Res	655604.375	4183510.25	2.20E-07	1.35E-08	2.33E-07
63	Res	655649.25	4183465.5	2.40E-07	1.40E-08	2.54E-07
64	Res	655695.5625	4183473	2.32E-07	1.45E-08	2.47E-07
65	Res	655646.25	4183544.75	1.95E-07	1.24E-08	2.07E-07
66	Res	655728.5	4183497	2.11E-07	1.39E-08	2.25E-07
67	Res	655617.8125	4183431	2.74E-07	1.52E-08	2.89E-07
68	Res	655655.1875	4183411.75	2.82E-07	1.70E-08	2.99E-07
69	Res	655650.75	4183501.5	2.20E-07	1.30E-08	2.33E-07
70	Res	655860.0625	4183311.5	3.23E-07	2.19E-08	3.45E-07
71	Res	655922.875	4183302.5	3.07E-07	2.15E-08	3.28E-07
72	Res	655985.6875	4183302.5	2.82E-07	2.08E-08	3.03E-07
73	Res	656050.75	4183305.5	2.53E-07	1.98E-08	2.73E-07
74	Res	655855.75	4183379	2.69E-07	1.78E-08	2.87E-07
75	Res	655906.375	4183363.75	2.65E-07	1.86E-08	2.84E-07
76	Res	655979.8125	4183361.25	2.49E-07	1.81E-08	2.67E-07
77	Res	655816.0625	4183414.75	2.53E-07	1.74E-08	2.70E-07
78	Res	655866.0625	4183149.75	4.77E-07	3.47E-08	5.11E-07
79	Res	655943.9375	4183173.75	3.90E-07	2.95E-08	4.19E-07
80	Res	656063.625	4183170.25	3.19E-07	2.73E-08	3.46E-07
81	Res	656167.5	4183168.75	2.69E-07	2.63E-08	2.96E-07
82	Res	655896.375	4182828.5	6.09E-07	7.61E-08	6.85E-07
83	Res	655577.125	4182880	1.96E-06	2.86E-07	2.25E-06
84	Res	655551.8125	4182963.5	2.16E-06	1.86E-07	2.34E-06
85	Res	656101.4375	4182378.5	2.69E-07	4.26E-08	3.12E-07
86	Res	655935.5625	4182373	3.52E-07	5.21E-08	4.04E-07
87	Res	655937.0625	4182306.5	3.15E-07	4.78E-08	3.63E-07
88	Res	656000.5625	4182302.25	2.86E-07	4.42E-08	3.30E-07
89	Res	655560.4375	4182299.25	5.47E-07	8.44E-08	6.32E-07
90	Res	655527.9375	4182252	4.68E-07	6.99E-08	5.38E-07
91	Res	655461.5	4182280	5.43E-07	7.62E-08	6.19E-07
92	Res	654993.3125	4182475	5.47E-07	4.83E-08	5.95E-07
93	Res	654675.75	4182334.75	2.49E-07	2.71E-08	2.76E-07
94	Res	655324.75	4182453.25	1.43E-06	1.05E-07	1.54E-06
95	Res	655254.6875	4182439.25	1.03E-06	8.12E-08	1.11E-06
96	Res	655143.375	4182418.25	6.84E-07	6.09E-08	7.45E-07
97	Res	654729.0625	4182408	2.90E-07	3.15E-08	3.22E-07
98	Res	656046.25	4182389.5	2.98E-07	4.61E-08	3.45E-07
99	Res	655909.5	4182413.25	3.94E-07	5.71E-08	4.51E-07
100	Res	656062	4182431.5	3.07E-07	4.73E-08	3.54E-07
101	Res	656160.625	4182731.25	3.19E-07	4.60E-08	3.65E-07
102	Res	656168.5	4182657.75	3.11E-07	4.59E-08	3.57E-07
103	Res	656235.5625	4182812.75	2.90E-07	3.98E-08	3.30E-07
104	Res	656324.9375	4183178.25	2.16E-07	2.38E-08	2.39E-07
105	Res	654750.6875	4183308.5	4.27E-07	4.05E-08	4.67E-07
106	Res	654796.625	4183309.25	4.68E-07	4.53E-08	5.14E-07
107	Res	654832.5625	4183309.25	5.06E-07	5.05E-08	5.56E-07
108	Res	654877.8125	4183305.75	5.64E-07	5.50E-08	6.19E-07
109	Res	654923.75	4183309.75	6.26E-07	5.63E-08	6.82E-07
110	Res	654975	4183310.5	7.17E-07	5.82E-08	7.75E-07
111	Res	654628.6875	4183312.5	3.44E-07	3.41E-08	3.78E-07
112	Res	655056.9375	4183318.5	8.62E-07	4.97E-08	9.12E-07
113	Res	655097.375	4183317	9.16E-07	4.66E-08	9.63E-07
114	Res	655218.625	4183326	7.54E-07	3.48E-08	7.89E-07
115	Res	655565.875	4181945	1.95E-07	2.92E-08	2.24E-07
116	Res	655489.125	4181793.25	1.45E-07	2.19E-08	1.67E-07
117	Res	654772.75	4182128	1.91E-07	2.23E-08	2.13E-07

[1]Risk for naphthalene and PAH (as benzo(a)pyrene) were obtained from HARP modeling output files for cancer risk based on a 70-year residentia exposure using "Derived (Adjusted)" analysis method.

Table B-3: Facility Cancer Risk Results

Worker Cancer Risk

Receptor ID	Receptor Type	Easting (m)	Northing (m)	Cancer Risk		Total Cancer Risk (per million)2
				DPM	PAH/ Naphthalene	
118	Sch/Wrk	655514.13	4183905	1.98E-08	7.53E-10	2.05E-08
119	Sch/Wrk	655103.56	4183652.5	5.48E-08	1.50E-09	5.63E-08
120	Wrk	655848.13	4182625	1.34E-07	7.54E-09	1.41E-07
121	Wrk	655548.25	4183635.8	3.50E-08	9.93E-10	3.60E-08

[2] Risk for naphthalene and PAH (as benzo(a)pyrene) were obtained from HARP modeling output files for cancer risk based on a 40-year worker exposure using "Point Estimate" analysis method.

Child Cancer Risk

Receptor ID	Receptor Type	Easting (m)	Northing (m)	Cancer Risk		Total Cancer Risk (per million)3
				DPM	PAH/ Naphthalene	
118	Sch	655514.13	4183905	1.73E-08	1.51E-09	1.88E-08
119	Sch	655103.56	4183652.5	4.81E-08	3.00E-09	5.11E-08

[3] Risk for naphthalene and PAH (as benzo(a)pyrene) were obtained from HARP modeling output files for cancer risk based on a 9-year child exposure scenario using "Derived OEHHA" analysis method.

Table B-4: Total Chronic Hazard Index - Residential Receptors						
Residential Receptor Chronic HI						
Receptor ID	Receptor Type	Easting (m)	Northing (m)	Chronic HI1		Total Chronic HI
				DPM	Naphthalene	
1	Res	654835.06	4182743.3		2.44E-06	2.44E-06
2	Res	654838	4182787.5		2.55E-06	2.55E-06
3	Res	654839.63	4182833.5		2.73E-06	2.73E-06
4	Res	654839.63	4182896.5		2.90E-06	2.90E-06
5	Res	654839.63	4182939		3.35E-06	3.35E-06
6	Res	654840.44	4182985		3.61E-06	3.61E-06
7	Res	654841.25	4183031.8		3.65E-06	3.65E-06
8	Res	654797.81	4182742.5		2.19E-06	2.19E-06
9	Res	654797.81	4182801.5		2.32E-06	2.32E-06
10	Res	654797	4182856.3		2.45E-06	2.45E-06
11	Res	654795.38	4182898.3		2.53E-06	2.53E-06
12	Res	654795.38	4182942.5		2.93E-06	2.93E-06
13	Res	654794.56	4182983.3		3.13E-06	3.13E-06
14	Res	654793.75	4183030		3.18E-06	3.18E-06
15	Res	654805.19	4183096.5		3.04E-06	3.04E-06
16	Res	654767.5	4183096.5		2.81E-06	2.81E-06
17	Res	654725.38	4183321.8		1.97E-06	1.97E-06
18	Res	654776.56	4183323.5		2.18E-06	2.18E-06
19	Res	654815.19	4183320.8		2.40E-06	2.40E-06
20	Res	654849	4183319.8		2.55E-06	2.55E-06
21	Res	654903.13	4183320.8		2.64E-06	2.64E-06
22	Res	654962	4183320.8		2.71E-06	2.71E-06
23	Res	655033.5	4183331.3		2.39E-06	2.39E-06
24	Res	655076	4183332.3		2.20E-06	2.20E-06
25	Res	655118.5	4183332.3		2.06E-06	2.06E-06
26	Res	655147.5	4183332.3		1.98E-06	1.98E-06
27	Res	655189.06	4183338		1.81E-06	1.81E-06
28	Res	655235.44	4183349.8		1.50E-06	1.50E-06
29	Res	655279.81	4183373.8		1.21E-06	1.21E-06
30	Res	655316.56	4183400		9.94E-07	9.94E-07
31	Res	655351.31	4183447.3		8.24E-07	8.24E-07
32	Res	655372.56	4183484		7.43E-07	7.43E-07
33	Res	655339.19	4183496.8		7.30E-07	7.30E-07
34	Res	655318.69	4183462.3		8.27E-07	8.27E-07
35	Res	655282.06	4183447.3		9.57E-07	9.57E-07
36	Res	655253	4183404		1.20E-06	1.20E-06
37	Res	655219.56	4183391		1.38E-06	1.38E-06
38	Res	655182.94	4183391		1.52E-06	1.52E-06
39	Res	655143.06	4183367.5		1.75E-06	1.75E-06
40	Res	655095.69	4183365.3		1.86E-06	1.86E-06
41	Res	655037.5	4183366.3		2.05E-06	2.05E-06
42	Res	654983.63	4183363		2.28E-06	2.28E-06
43	Res	654906.56	4183375.3		2.28E-06	2.28E-06
44	Res	654833.81	4183373.5		2.23E-06	2.23E-06
45	Res	654777.25	4183388.3		2.08E-06	2.08E-06
46	Res	654722.31	4183383.3		1.89E-06	1.89E-06
47	Res	654656.06	4183325		1.79E-06	1.79E-06

Table B-4: Total Chronic Hazard Index - Residential Receptors						
Residential Receptor Chronic HI						
Receptor ID	Receptor Type	Easting (m)	Northing (m)	Chronic HI1		Total Chronic HI
				DPM	Naphthalene	
48	Res	654614	4183326.8		1.70E-06	1.70E-06
49	Res	654607.56	4183372		1.62E-06	1.62E-06
50	Res	654641.5	4183375.3		1.68E-06	1.68E-06
51	Res	654690	4183409.3		1.76E-06	1.76E-06
52	Res	654837.06	4183425.3		1.98E-06	1.98E-06
53	Res	654903.31	4183469		1.73E-06	1.73E-06
54	Res	654985.75	4183433.5		1.73E-06	1.73E-06
55	Res	655031	4183448		1.54E-06	1.54E-06
56	Res	655107	4183451.3		1.38E-06	1.38E-06
57	Res	655216.88	4183470.5		1.10E-06	1.10E-06
58	Res	655408.94	4183435.8		8.73E-07	8.73E-07
59	Res	655458.81	4183485.8		7.60E-07	7.60E-07
60	Res	655552	4183467		7.38E-07	7.38E-07
61	Res	655604.38	4183468.5		7.14E-07	7.14E-07
62	Res	655604.38	4183510.3		6.68E-07	6.68E-07
63	Res	655649.25	4183465.5		7.10E-07	7.10E-07
64	Res	655695.56	4183473		7.22E-07	7.22E-07
65	Res	655646.25	4183544.8		6.23E-07	6.23E-07
66	Res	655728.5	4183497		6.93E-07	6.93E-07
67	Res	655617.81	4183431		7.63E-07	7.63E-07
68	Res	655655.19	4183411.8		8.31E-07	8.31E-07
69	Res	655650.75	4183501.5		6.59E-07	6.59E-07
70	Res	655860.06	4183311.5		1.07E-06	1.07E-06
71	Res	655922.88	4183302.5		1.06E-06	1.06E-06
72	Res	655985.69	4183302.5		1.04E-06	1.04E-06
73	Res	656050.75	4183305.5		1.00E-06	1.00E-06
74	Res	655855.75	4183379		9.05E-07	9.05E-07
75	Res	655906.38	4183363.8		9.23E-07	9.23E-07
76	Res	655979.81	4183361.3		8.98E-07	8.98E-07
77	Res	655816.06	4183414.8		8.58E-07	8.58E-07
78	Res	655866.06	4183149.8		1.70E-06	1.70E-06
79	Res	655943.94	4183173.8		1.46E-06	1.46E-06
80	Res	656063.63	4183170.3		1.35E-06	1.35E-06
81	Res	656167.5	4183168.8		1.29E-06	1.29E-06
82	Res	655896.38	4182828.5		3.96E-06	3.96E-06
83	Res	655577.13	4182880		1.35E-05	1.35E-05
84	Res	655551.81	4182963.5		8.15E-06	8.15E-06
85	Res	656101.44	4182378.5		2.50E-06	2.50E-06
86	Res	655935.56	4182373		3.17E-06	3.17E-06
87	Res	655937.06	4182306.5		2.96E-06	2.96E-06
88	Res	656000.56	4182302.3		2.69E-06	2.69E-06
89	Res	655560.44	4182299.3		7.61E-06	7.61E-06
90	Res	655527.94	4182252		6.04E-06	6.04E-06
91	Res	655461.5	4182280		6.84E-06	6.84E-06
92	Res	654993.31	4182475		2.86E-06	2.86E-06
93	Res	654675.75	4182334.8		1.50E-06	1.50E-06

1. Chronic non-cacer impacts are for naphthalene only. SJVAPCD modeling guidance does not require the calculation of DPM chronic impacts. OEHHA has not publilshed factors for the evaluation of non-cancer risk impacts due to emissions of B(a)P.

Table B-5: Total Chronic Hazard Index - Worker Receptors						
Worker Receptor Chronic HI						
Receptor ID	**Receptor Type**	**Easting (m)**	**Northing (m)**	**Chronic HI1**		**Total Chronic HI**
				DPM	**Naphthalene**	
118	Sch/Wrk	655514.13	4183905		4.17E-07	4.17E-07
119	Sch/Wrk	655103.56	4183652.5		8.40E-07	8.40E-07
120	Wrk	655848.13	4182625		4.48E-06	4.48E-06
121	Wrk	655548.25	4183635.8		5.65E-07	5.65E-07

1. Chronic non-cacer impacts are for naphthalene only. SJVAPCD modeling guidance does not require the calculation of DPM chronic impacts. OEHHA has not publilshed factors for the evaluation of non-cancer risk impacts due to emissions of B(a)P.

Table B-6: DPM Cancer Risk Calculation					
Cancer Risk = (Slope factor x Cair x DBR x A x EF x ED x 10^-6)/AT					
Receptor Number	Easting (m)	Northing (m)	Receptor Type	Concentration (ug/m3)	Cancer Risk
Residential Receptors- Cancer Risk Calculation					
1	654835.0625	4182743.25	Res	0.00136	5.64E-07
2	654838	4182787.5	Res	0.00139	5.76E-07
3	654839.625	4182833.5	Res	0.00144	5.97E-07
4	654839.625	4182896.5	Res	0.0015	6.22E-07
5	654839.625	4182939	Res	0.00152	6.30E-07
6	654840.4375	4182985	Res	0.00151	6.26E-07
7	654841.25	4183031.75	Res	0.00149	6.18E-07
8	654797.8125	4182742.5	Res	0.00124	5.14E-07
9	654797.8125	4182801.5	Res	0.00125	5.18E-07
10	654797	4182856.25	Res	0.00128	5.31E-07
11	654795.375	4182898.25	Res	0.0013	5.39E-07
12	654795.375	4182942.5	Res	0.00132	5.47E-07
13	654794.5625	4182983.25	Res	0.00132	5.47E-07
14	654793.75	4183030	Res	0.00131	5.43E-07
15	654805.1875	4183096.5	Res	0.00133	5.51E-07
16	654767.5	4183096.5	Res	0.0012	4.97E-07
17	654725.375	4183321.75	Res	0.00096	3.98E-07
18	654776.5625	4183323.5	Res	0.00106	4.39E-07
19	654815.1875	4183320.75	Res	0.00115	4.77E-07
20	654849	4183319.75	Res	0.00124	5.14E-07
21	654903.125	4183320.75	Res	0.0014	5.80E-07
22	654962	4183320.75	Res	0.00163	6.76E-07
23	655033.5	4183331.25	Res	0.0019	7.88E-07
24	655076	4183332.25	Res	0.00202	8.37E-07
25	655118.5	4183332.25	Res	0.00205	8.50E-07
26	655147.5	4183332.25	Res	0.00201	8.33E-07
27	655189.0625	4183338	Res	0.0018	7.46E-07
28	655235.4375	4183349.75	Res	0.00154	6.38E-07
29	655279.8125	4183373.75	Res	0.00126	5.22E-07
30	655316.5625	4183400	Res	0.00104	4.31E-07
31	655351.3125	4183447.25	Res	0.00079	3.27E-07
32	655372.5625	4183484	Res	0.00066	2.74E-07
33	655339.1875	4183496.75	Res	0.00069	2.86E-07
34	655318.6875	4183462.25	Res	0.00081	3.36E-07
35	655282.0625	4183447.25	Res	0.00092	3.81E-07
36	655253	4183404	Res	0.00115	4.77E-07
37	655219.5625	4183391	Res	0.00128	5.31E-07
38	655182.9375	4183391	Res	0.00138	5.72E-07
39	655143.0625	4183367.5	Res	0.00166	6.88E-07
40	655095.6875	4183365.25	Res	0.00175	7.25E-07
41	655037.5	4183366.25	Res	0.0017	7.05E-07
42	654983.625	4183363	Res	0.00156	6.47E-07
43	654906.5625	4183375.25	Res	0.00129	5.35E-07
44	654833.8125	4183373.5	Res	0.0011	4.56E-07
45	654777.25	4183388.25	Res	0.00096	3.98E-07

Table B-6: DPM Cancer Risk Calculation					
Cancer Risk = (Slope factor x Cair x DBR x A x EF x ED x 10^-6)/AT					
Receptor Number	**Easting (m)**	**Northing (m)**	**Receptor Type**	**Concentration (ug/m3)**	**Cancer Risk**
46	654722.3125	4183383.25	Res	0.00087	3.61E-07
47	654656.0625	4183325	Res	0.00085	3.52E-07
48	654614	4183326.75	Res	0.00079	3.27E-07
49	654607.5625	4183372	Res	0.00073	3.03E-07
50	654641.5	4183375.25	Res	0.00077	3.19E-07
51	654690	4183409.25	Res	0.0008	3.32E-07
52	654837.0625	4183425.25	Res	0.00103	4.27E-07
53	654903.3125	4183469	Res	0.00108	4.48E-07
54	654985.75	4183433.5	Res	0.0013	5.39E-07
55	655031	4183448	Res	0.00126	5.22E-07
56	655107	4183451.25	Res	0.00118	4.89E-07
57	655216.875	4183470.5	Res	0.00093	3.86E-07
58	655408.9375	4183435.75	Res	0.00073	3.03E-07
59	655458.8125	4183485.75	Res	0.00059	2.45E-07
60	655552	4183467	Res	0.00062	2.57E-07
61	655604.375	4183468.5	Res	0.00059	2.45E-07
62	655604.375	4183510.25	Res	0.00053	2.20E-07
63	655649.25	4183465.5	Res	0.00058	2.40E-07
64	655695.5625	4183473	Res	0.00056	2.32E-07
65	655646.25	4183544.75	Res	0.00047	1.95E-07
66	655728.5	4183497	Res	0.00051	2.11E-07
67	655617.8125	4183431	Res	0.00066	2.74E-07
68	655655.1875	4183411.75	Res	0.00068	2.82E-07
69	655650.75	4183501.5	Res	0.00053	2.20E-07
70	655860.0625	4183311.5	Res	0.00078	3.23E-07
71	655922.875	4183302.5	Res	0.00074	3.07E-07
72	655985.6875	4183302.5	Res	0.00068	2.82E-07
73	656050.75	4183305.5	Res	0.00061	2.53E-07
74	655855.75	4183379	Res	0.00065	2.69E-07
75	655906.375	4183363.75	Res	0.00064	2.65E-07
76	655979.8125	4183361.25	Res	0.0006	2.49E-07
77	655816.0625	4183414.75	Res	0.00061	2.53E-07
78	655866.0625	4183149.75	Res	0.00115	4.77E-07
79	655943.9375	4183173.75	Res	0.00094	3.90E-07
80	656063.625	4183170.25	Res	0.00077	3.19E-07
81	656167.5	4183168.75	Res	0.00065	2.69E-07
82	655896.375	4182828.5	Res	0.00147	6.09E-07
83	655577.125	4182880	Res	0.00473	1.96E-06
84	655551.8125	4182963.5	Res	0.0052	2.16E-06
85	656101.4375	4182378.5	Res	0.00065	2.69E-07
86	655935.5625	4182373	Res	0.00085	3.52E-07
87	655937.0625	4182306.5	Res	0.00076	3.15E-07
88	656000.5625	4182302.25	Res	0.00069	2.86E-07
89	655560.4375	4182299.25	Res	0.00132	5.47E-07
90	655527.9375	4182252	Res	0.00113	4.68E-07
91	655461.5	4182280	Res	0.00131	5.43E-07

Table B-6: DPM Cancer Risk Calculation					
Cancer Risk = (Slope factor x Cair x DBR x A x EF x ED x 10^-6)/AT					
Receptor Number	**Easting (m)**	**Northing (m)**	**Receptor Type**	**Concentration (ug/m3)**	**Cancer Risk**
92	654993.3125	4182475	Res	0.00132	5.47E-07
93	654675.75	4182334.75	Res	0.0006	2.49E-07
94	655324.75	4182453.25	Res	0.00346	1.43E-06
95	655254.6875	4182439.25	Res	0.00248	1.03E-06
96	655143.375	4182418.25	Res	0.00165	6.84E-07
97	654729.0625	4182408	Res	0.0007	2.90E-07
98	656046.25	4182389.5	Res	0.00072	2.98E-07
99	655909.5	4182413.25	Res	0.00095	3.94E-07
100	656062	4182431.5	Res	0.00074	3.07E-07
101	656160.625	4182731.25	Res	0.00077	3.19E-07
102	656168.5	4182657.75	Res	0.00075	3.11E-07
103	656235.5625	4182812.75	Res	0.0007	2.90E-07
104	656324.9375	4183178.25	Res	0.00052	2.16E-07
105	654750.6875	4183308.5	Res	0.00103	4.27E-07
106	654796.625	4183309.25	Res	0.00113	4.68E-07
107	654832.5625	4183309.25	Res	0.00122	5.06E-07
108	654877.8125	4183305.75	Res	0.00136	5.64E-07
109	654923.75	4183309.75	Res	0.00151	6.26E-07
110	654975	4183310.5	Res	0.00173	7.17E-07
111	654628.6875	4183312.5	Res	0.00083	3.44E-07
112	655056.9375	4183318.5	Res	0.00208	8.62E-07
113	655097.375	4183317	Res	0.00221	9.16E-07
114	655218.625	4183326	Res	0.00182	7.54E-07
115	655565.875	4181945	Res	0.00047	1.95E-07
116	655489.125	4181793.25	Res	0.00035	1.45E-07
117	654772.75	4182128	Res	0.00046	1.91E-07

Residential Risk Calculation

DPM Solpe Factor (mg/kg-day)	1.1
Exposure Frequency EF (days/year)	350
Exposure Duration ED (years)	70
Daily Breathing Rate (litres/kg-day)	393
Averaging time AT (days)	25550
conversion factor	10^-6
A	1

Table B-6: DPM Cancer Risk Calculation

Cancer Risk = (Slope factor x Cair x DBR x A x EF x ED x 10^-6)/AT

Receptor Number	Easting (m)	Northing (m)	Receptor Type	Concentration (ug/m3)	Cancer Risk
Worker Receptors- DPM Cancer Risk Calculation					
118	655514.125	4183905	Sch/Wrk	0.00022	1.98E-08
119	655103.5625	4183652.5	Sch/Wrk	0.00061	5.48E-08
120	655848.125	4182625	Wrk	0.00149	1.34E-07
121	655548.25	4183635.75	Wrk	0.00039	3.50E-08

Worker Risk Calculation

DPM Solpe Factor (mg/kg-day)	1.1
Exposure Frequency EF (days/year)	350
Exposure Duration ED (years)	40
Daily Breathing Rate (litres/kg-day)	149
Averaging time AT (days)	25550
conversion factor	10^-6
A	1

Sensitive Receptors- DPM Cancer Risk Calculation					
118	655514.125	4183905	Sch	0.00022	1.73E-08
119	655103.5625	4183652.5	Sch	0.00061	4.81E-08

Sensitive Risk Calculation

DPM Solpe Factor (mg/kg-day)	1.1
Exposure Frequency EF (days/year)	350
Exposure Duration ED (years)	9
Daily Breathing Rate (litres/kg-day)	581
Averaging time AT (days)	25550
conversion factor	10^-6
A	1

Table B-7: HARP Output: 70-year Residential Cancer Risk															
REC	INHAL	DERM	SOIL	MOTHER	FISH	WATER	VEG	DAIRY	BEEF	CHICK	PIG	EGG	MEAT	ORAL	TOTAL
1	1.03E-09	8.95E-09	1.34E-09	0.00E+00	0.00E+00	0.00E+00	3.27E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.30E-08	4.41E-08
2	1.08E-09	9.51E-09	1.42E-09	0.00E+00	0.00E+00	0.00E+00	3.48E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.57E-08	4.68E-08
3	1.16E-09	1.03E-08	1.54E-09	0.00E+00	0.00E+00	0.00E+00	3.76E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.94E-08	5.06E-08
4	1.22E-09	1.05E-08	1.58E-09	0.00E+00	0.00E+00	0.00E+00	3.86E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.07E-08	5.19E-08
5	1.44E-09	1.30E-08	1.94E-09	0.00E+00	0.00E+00	0.00E+00	4.74E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.24E-08	6.38E-08
6	1.58E-09	1.49E-08	2.23E-09	0.00E+00	0.00E+00	0.00E+00	5.45E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.16E-08	7.32E-08
7	1.61E-09	1.54E-08	2.31E-09	0.00E+00	0.00E+00	0.00E+00	5.65E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.43E-08	7.59E-08
8	9.25E-10	7.99E-09	1.20E-09	0.00E+00	0.00E+00	0.00E+00	2.92E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.84E-08	3.94E-08
9	9.90E-10	8.76E-09	1.31E-09	0.00E+00	0.00E+00	0.00E+00	3.21E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.21E-08	4.31E-08
10	1.04E-09	9.14E-09	1.37E-09	0.00E+00	0.00E+00	0.00E+00	3.34E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.39E-08	4.50E-08
11	1.07E-09	9.18E-09	1.37E-09	0.00E+00	0.00E+00	0.00E+00	3.36E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.41E-08	4.52E-08
12	1.25E-09	1.13E-08	1.69E-09	0.00E+00	0.00E+00	0.00E+00	4.12E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.41E-08	5.54E-08
13	1.36E-09	1.27E-08	1.90E-09	0.00E+00	0.00E+00	0.00E+00	4.65E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.11E-08	6.25E-08
14	1.40E-09	1.33E-08	1.99E-09	0.00E+00	0.00E+00	0.00E+00	4.87E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.40E-08	6.54E-08
15	1.33E-09	1.25E-08	1.88E-09	0.00E+00	0.00E+00	0.00E+00	4.59E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.03E-08	6.16E-08
16	1.23E-09	1.16E-08	1.74E-09	0.00E+00	0.00E+00	0.00E+00	4.26E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.60E-08	5.72E-08
17	8.51E-10	7.78E-09	1.17E-09	0.00E+00	0.00E+00	0.00E+00	2.85E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.74E-08	3.83E-08
18	9.42E-10	8.68E-09	1.30E-09	0.00E+00	0.00E+00	0.00E+00	3.18E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.17E-08	4.27E-08
19	1.04E-09	9.73E-09	1.46E-09	0.00E+00	0.00E+00	0.00E+00	3.56E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.68E-08	4.78E-08
20	1.11E-09	1.05E-08	1.57E-09	0.00E+00	0.00E+00	0.00E+00	3.83E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.03E-08	5.15E-08
21	1.15E-09	1.09E-08	1.63E-09	0.00E+00	0.00E+00	0.00E+00	3.98E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.23E-08	5.35E-08
22	1.19E-09	1.14E-08	1.71E-09	0.00E+00	0.00E+00	0.00E+00	4.17E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.48E-08	5.60E-08
23	1.05E-09	9.98E-09	1.49E-09	0.00E+00	0.00E+00	0.00E+00	3.65E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.80E-08	4.90E-08
24	9.66E-10	9.21E-09	1.38E-09	0.00E+00	0.00E+00	0.00E+00	3.37E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.43E-08	4.52E-08
25	9.02E-10	8.59E-09	1.29E-09	0.00E+00	0.00E+00	0.00E+00	3.14E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.13E-08	4.22E-08
26	8.71E-10	8.36E-09	1.25E-09	0.00E+00	0.00E+00	0.00E+00	3.06E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.02E-08	4.11E-08
27	7.90E-10	7.45E-09	1.12E-09	0.00E+00	0.00E+00	0.00E+00	2.73E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.58E-08	3.66E-08
28	6.53E-10	6.07E-09	9.09E-10	0.00E+00	0.00E+00	0.00E+00	2.22E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.92E-08	2.98E-08
29	5.24E-10	4.85E-09	7.26E-10	0.00E+00	0.00E+00	0.00E+00	1.77E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.33E-08	2.38E-08
30	4.32E-10	4.04E-09	6.06E-10	0.00E+00	0.00E+00	0.00E+00	1.48E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.94E-08	1.99E-08
31	3.60E-10	3.40E-09	5.09E-10	0.00E+00	0.00E+00	0.00E+00	1.24E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.64E-08	1.67E-08
32	3.25E-10	3.08E-09	4.62E-10	0.00E+00	0.00E+00	0.00E+00	1.13E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.48E-08	1.51E-08
33	3.17E-10	2.94E-09	4.41E-10	0.00E+00	0.00E+00	0.00E+00	1.08E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-08	1.45E-08
34	3.58E-10	3.32E-09	4.97E-10	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	1.60E-08	1.63E-08
35	4.14E-10	3.80E-09	5.69E-10	0.00E+00	0.00E+00	0.00E+00	1.39E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-08	1.87E-08
36	5.19E-10	4.78E-09	7.17E-10	0.00E+00	0.00E+00	0.00E+00	1.75E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E-08	2.35E-08
37	5.97E-10	5.55E-09	8.31E-10	0.00E+00	0.00E+00	0.00E+00	2.03E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.67E-08	2.73E-08
38	6.60E-10	6.16E-09	9.23E-10	0.00E+00	0.00E+00	0.00E+00	2.26E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.96E-08	3.03E-08
39	7.70E-10	7.35E-09	1.10E-09	0.00E+00	0.00E+00	0.00E+00	2.69E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.54E-08	3.61E-08
40	8.13E-10	7.69E-09	1.15E-09	0.00E+00	0.00E+00	0.00E+00	2.81E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.70E-08	3.78E-08
41	8.98E-10	8.53E-09	1.28E-09	0.00E+00	0.00E+00	0.00E+00	3.12E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.10E-08	4.19E-08
42	1.00E-09	9.51E-09	1.42E-09	0.00E+00	0.00E+00	0.00E+00	3.48E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.57E-08	4.67E-08
43	9.98E-10	9.45E-09	1.42E-09	0.00E+00	0.00E+00	0.00E+00	3.46E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.54E-08	4.64E-08
44	9.72E-10	9.11E-09	1.36E-09	0.00E+00	0.00E+00	0.00E+00	3.33E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.38E-08	4.48E-08
45	9.04E-10	8.42E-09	1.26E-09	0.00E+00	0.00E+00	0.00E+00	3.08E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.05E-08	4.14E-08
46	8.15E-10	7.47E-09	1.12E-09	0.00E+00	0.00E+00	0.00E+00	2.73E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.59E-08	3.67E-08
47	7.74E-10	7.11E-09	1.06E-09	0.00E+00	0.00E+00	0.00E+00	2.60E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.42E-08	3.49E-08
48	7.34E-10	6.73E-09	1.01E-09	0.00E+00	0.00E+00	0.00E+00	2.46E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.23E-08	3.31E-08
49	7.00E-10	6.40E-09	9.58E-10	0.00E+00	0.00E+00	0.00E+00	2.34E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.08E-08	3.15E-08
50	7.22E-10	6.57E-09	9.84E-10	0.00E+00	0.00E+00	0.00E+00	2.40E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.16E-08	3.23E-08
51	7.59E-10	6.94E-09	1.04E-09	0.00E+00	0.00E+00	0.00E+00	2.54E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.33E-08	3.41E-08
52	8.62E-10	8.07E-09	1.21E-09	0.00E+00	0.00E+00	0.00E+00	2.95E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.88E-08	3.97E-08
53	7.53E-10	7.06E-09	1.06E-09	0.00E+00	0.00E+00	0.00E+00	2.58E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-08	3.47E-08
54	7.55E-10	7.10E-09	1.06E-09	0.00E+00	0.00E+00	0.00E+00	2.60E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.42E-08	3.49E-08
55	6.72E-10	6.33E-09	9.48E-10	0.00E+00	0.00E+00	0.00E+00	2.32E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.04E-08	3.11E-08
56	6.02E-10	5.68E-09	8.50E-10	0.00E+00	0.00E+00	0.00E+00	2.08E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.73E-08	2.79E-08
57	4.75E-10	4.39E-09	6.58E-10	0.00E+00	0.00E+00	0.00E+00	1.61E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.11E-08	2.16E-08
58	3.84E-10	3.69E-09	5.53E-10	0.00E+00	0.00E+00	0.00E+00	1.35E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.77E-08	1.81E-08
59	3.30E-10	3.07E-09	4.60E-10	0.00E+00	0.00E+00	0.00E+00	1.12E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.48E-08	1.51E-08
60	3.22E-10	3.03E-09	4.54E-10	0.00E+00	0.00E+00	0.00E+00	1.11E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.46E-08	1.49E-08
61	3.11E-10	2.92E-09	4.38E-10	0.00E+00	0.00E+00	0.00E+00	1.07E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-08	1.44E-08
62	2.91E-10	2.74E-09	4.10E-10	0.00E+00	0.00E+00	0.00E+00	1.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E-08	1.35E-08
63	3.08E-10	2.86E-09	4.28E-10	0.00E+00	0.00E+00	0.00E+00	1.05E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.37E-08	1.40E-08
64	3.15E-10	2.95E-09	4.43E-10	0.00E+00	0.00E+00	0.00E+00	1.08E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.42E-08	1.45E-08
65	2.71E-10	2.52E-09	3.78E-10	0.00E+00	0.00E+00	0.00E+00	9.23E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.21E-08	1.24E-08
66	3.02E-10	2.84E-09	4.25E-10	0.00E+00	0.00E+00	0.00E+00	1.04E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.36E-08	1.39E-08
67	3.32E-10	3.09E-09	4.63E-10	0.00E+00	0.00E+00	0.00E+00	1.13E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.49E-08	1.52E-08
68	3.64E-10	3.45E-09	5.17E-10	0.00E+00	0.00E+00	0.00E+00	1.26E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.66E-08	1.70E-08
69	2.85E-10	2.64E-09	3.95E-10	0.00E+00	0.00E+00	0.00E+00	9.65E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.27E-08	1.30E-08
70	4.69E-10	4.46E-09	6.68E-10	0.00E+00	0.00E+00	0.00E+00	1.63E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.14E-08	2.19E-08
71	4.63E-10	4.37E-09	6.54E-10	0.00E+00	0.00E+00	0.00E+00	1.60E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.10E-08	2.15E-08
72	4.54E-10	4.23E-09	6.34E-10	0.00E+00	0.00E+00	0.00E+00	1.55E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.03E-08	2.08E-08
73	4.35E-10	4.03E-09	6.03E-10	0.00E+00	0.00E+00	0.00E+00	1.47E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.94E-08	1.98E-08
74	3.92E-10	3.62E-09	5.42E-10	0.00E+00	0.00E+00	0.00E+00	1.32E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.74E-08	1.78E-08
75	4.02E-10	3.78E-09	5.66E-10	0.00E+00	0.00E+00	0.00E+00	1.38E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.82E-08	1.86E-08
76	3.92E-10	3.68E-09	5.52E-10	0.00E+00	0.00E+00	0.00E+00	1.35E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.77E-08	1.81E-08
77	3.75E-10	3.53E-09	5.29E-10	0.00E+00	0.00E+00	0.00E+00	1.29E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-08	1.74E-08
78	7.43E-10	7.06E-09	1.06E-09	0.00E+00	0.00E+00	0.00E+00	2.58E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.39E-08	3.47E-08
79	6.36E-10	6.00E-09	8.99E-10	0.00E+00	0.00E+00	0.00E+00	2.20E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.89E-08	2.95E-08
80	5.90E-10	5.56E-09	8.33E-10	0.00E+00	0.00E+00	0.00E+00	2.03E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.67E-08	2.73E-08

Table B-7: HARP Output: 70-year Residential Cancer Risk															
REC	INHAL	DERM	SOIL	MOTHER	FISH	WATER	VEG	DAIRY	BEEF	CHICK	PIG	EGG	MEAT	ORAL	TOTAL
81	5.66E-10	5.34E-09	8.01E-10	0.00E+00	0.00E+00	0.00E+00	1.96E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.57E-08	2.63E-08
82	1.70E-09	1.55E-08	2.32E-09	0.00E+00	0.00E+00	0.00E+00	5.66E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.44E-08	7.61E-08
83	5.96E-09	5.83E-08	8.73E-09	0.00E+00	0.00E+00	0.00E+00	2.13E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.80E-07	2.86E-07
84	3.69E-09	3.78E-08	5.67E-09	0.00E+00	0.00E+00	0.00E+00	1.38E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.82E-07	1.86E-07
85	1.04E-09	8.65E-09	1.30E-09	0.00E+00	0.00E+00	0.00E+00	3.16E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.16E-08	4.26E-08
86	1.31E-09	1.06E-08	1.58E-09	0.00E+00	0.00E+00	0.00E+00	3.86E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.08E-08	5.21E-08
87	1.22E-09	9.68E-09	1.45E-09	0.00E+00	0.00E+00	0.00E+00	3.54E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.66E-08	4.78E-08
88	1.11E-09	8.96E-09	1.34E-09	0.00E+00	0.00E+00	0.00E+00	3.28E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.31E-08	4.42E-08
89	2.89E-09	1.70E-08	2.54E-09	0.00E+00	0.00E+00	0.00E+00	6.20E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.15E-08	8.44E-08
90	2.31E-09	1.41E-08	2.11E-09	0.00E+00	0.00E+00	0.00E+00	5.15E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.76E-08	6.99E-08
91	2.60E-09	1.53E-08	2.29E-09	0.00E+00	0.00E+00	0.00E+00	5.60E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.36E-08	7.62E-08
92	1.19E-09	9.80E-09	1.47E-09	0.00E+00	0.00E+00	0.00E+00	3.59E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.71E-08	4.83E-08
93	6.34E-10	5.51E-09	8.26E-10	0.00E+00	0.00E+00	0.00E+00	2.02E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.65E-08	2.71E-08
94	3.38E-09	2.10E-08	3.15E-09	0.00E+00	0.00E+00	0.00E+00	7.70E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E-07	1.05E-07
95	2.34E-09	1.64E-08	2.46E-09	0.00E+00	0.00E+00	0.00E+00	6.00E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.88E-08	8.12E-08
96	1.55E-09	1.23E-08	1.85E-09	0.00E+00	0.00E+00	0.00E+00	4.51E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.93E-08	6.09E-08
97	7.27E-10	6.40E-09	9.59E-10	0.00E+00	0.00E+00	0.00E+00	2.34E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.08E-08	3.15E-08
98	1.13E-09	9.35E-09	1.40E-09	0.00E+00	0.00E+00	0.00E+00	3.42E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.50E-08	4.61E-08
99	1.44E-09	1.16E-08	1.73E-09	0.00E+00	0.00E+00	0.00E+00	4.24E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.57E-08	5.71E-08
100	1.16E-09	9.61E-09	1.44E-09	0.00E+00	0.00E+00	0.00E+00	3.51E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.62E-08	4.73E-08
101	1.04E-09	9.36E-09	1.40E-09	0.00E+00	0.00E+00	0.00E+00	3.42E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.50E-08	4.60E-08
102	1.05E-09	9.33E-09	1.40E-09	0.00E+00	0.00E+00	0.00E+00	3.41E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.49E-08	4.59E-08
103	9.01E-10	8.09E-09	1.21E-09	0.00E+00	0.00E+00	0.00E+00	2.96E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.89E-08	3.98E-08
104	5.14E-10	4.84E-09	7.25E-10	0.00E+00	0.00E+00	0.00E+00	1.77E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.33E-08	2.38E-08
105	9.00E-10	8.24E-09	1.23E-09	0.00E+00	0.00E+00	0.00E+00	3.02E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.96E-08	4.05E-08
106	9.97E-10	9.22E-09	1.38E-09	0.00E+00	0.00E+00	0.00E+00	3.37E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.43E-08	4.53E-08
107	1.10E-09	1.03E-08	1.54E-09	0.00E+00	0.00E+00	0.00E+00	3.76E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.94E-08	5.05E-08
108	1.18E-09	1.12E-08	1.68E-09	0.00E+00	0.00E+00	0.00E+00	4.09E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.38E-08	5.50E-08
109	1.21E-09	1.15E-08	1.72E-09	0.00E+00	0.00E+00	0.00E+00	4.19E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.51E-08	5.63E-08
110	1.23E-09	1.18E-08	1.77E-09	0.00E+00	0.00E+00	0.00E+00	4.33E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.70E-08	5.82E-08
111	7.57E-10	6.94E-09	1.04E-09	0.00E+00	0.00E+00	0.00E+00	2.54E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.34E-08	3.41E-08
112	1.06E-09	1.01E-08	1.52E-09	0.00E+00	0.00E+00	0.00E+00	3.70E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.86E-08	4.97E-08
113	9.94E-10	9.48E-09	1.42E-09	0.00E+00	0.00E+00	0.00E+00	3.47E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.56E-08	4.66E-08
114	7.57E-10	7.08E-09	1.06E-09	0.00E+00	0.00E+00	0.00E+00	2.59E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-08	3.48E-08
115	7.67E-10	5.91E-09	8.85E-10	0.00E+00	0.00E+00	0.00E+00	2.16E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.84E-08	2.92E-08
116	5.54E-10	4.43E-09	6.64E-10	0.00E+00	0.00E+00	0.00E+00	1.62E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.13E-08	2.19E-08
117	5.23E-10	4.52E-09	6.78E-10	0.00E+00	0.00E+00	0.00E+00	1.66E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.18E-08	2.23E-08

Table B-8: HARP Output: Residential Chronic HI														
REC	CV	CNS	BONE	DEVEL	ENDO	EYE	GILV	IMMUN	KIDN	REPRO	RESP	SKIN	BLOOD	MAX
1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.44E-06	0.00E+00	0.00E+00	2.44E-06
2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E-06	0.00E+00	0.00E+00	2.55E-06
3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.73E-06	0.00E+00	0.00E+00	2.73E-06
4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.90E-06	0.00E+00	0.00E+00	2.90E-06
5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.35E-06	0.00E+00	0.00E+00	3.35E-06
6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.61E-06	0.00E+00	0.00E+00	3.61E-06
7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.65E-06	0.00E+00	0.00E+00	3.65E-06
8	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.19E-06	0.00E+00	0.00E+00	2.19E-06
9	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.32E-06	0.00E+00	0.00E+00	2.32E-06
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	2.45E-06	0.00E+00	0.00E+00	2.45E-06
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	2.53E-06	0.00E+00	0.00E+00	2.53E-06
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	2.93E-06	0.00E+00	0.00E+00	2.93E-06
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	0.00E+00	0.00E+00	3.13E-06	0.00E+00	0.00E+00	3.13E-06
14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.18E-06	0.00E+00	0.00E+00	3.18E-06
15	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.04E-06	0.00E+00	0.00E+00	3.04E-06
16	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.81E-06	0.00E+00	0.00E+00	2.81E-06
17	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.97E-06	0.00E+00	0.00E+00	1.97E-06
18	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.18E-06	0.00E+00	0.00E+00	2.18E-06
19	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.40E-06	0.00E+00	0.00E+00	2.40E-06
20	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.55E-06	0.00E+00	0.00E+00	2.55E-06
21	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.64E-06	0.00E+00	0.00E+00	2.64E-06
22	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.71E-06	0.00E+00	0.00E+00	2.71E-06
23	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.39E-06	0.00E+00	0.00E+00	2.39E-06
24	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.20E-06	0.00E+00	0.00E+00	2.20E-06
25	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.06E-06	0.00E+00	0.00E+00	2.06E-06
26	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.98E-06	0.00E+00	0.00E+00	1.98E-06
27	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-06	0.00E+00	0.00E+00	1.81E-06
28	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E-06	0.00E+00	0.00E+00	1.50E-06
29	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.21E-06	0.00E+00	0.00E+00	1.21E-06
30	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.94E-07	0.00E+00	0.00E+00	9.94E-07
31	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.24E-07	0.00E+00	0.00E+00	8.24E-07
32	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.43E-07	0.00E+00	0.00E+00	7.43E-07
33	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.30E-07	0.00E+00	0.00E+00	7.30E-07
34	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.27E-07	0.00E+00	0.00E+00	8.27E-07
35	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.57E-07	0.00E+00	0.00E+00	9.57E-07
36	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.20E-06	0.00E+00	0.00E+00	1.20E-06
37	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.38E-06	0.00E+00	0.00E+00	1.38E-06
38	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.52E-06	0.00E+00	0.00E+00	1.52E-06
39	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.75E-06	0.00E+00	0.00E+00	1.75E-06
40	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.86E-06	0.00E+00	0.00E+00	1.86E-06
41	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.05E-06	0.00E+00	0.00E+00	2.05E-06
42	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.28E-06	0.00E+00	0.00E+00	2.28E-06
43	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.28E-06	0.00E+00	0.00E+00	2.28E-06
44	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.23E-06	0.00E+00	0.00E+00	2.23E-06
45	0.00E+00	0.00E+00	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-06	0.00E+00	0.00E+00	2.08E-06
46	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.89E-06	0.00E+00	0.00E+00	1.89E-06
47	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.79E-06	0.00E+00	0.00E+00	1.79E-06
48	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-06	0.00E+00	0.00E+00	1.70E-06
49	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.62E-06	0.00E+00	0.00E+00	1.62E-06
50	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.68E-06	0.00E+00	0.00E+00	1.68E-06
51	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.76E-06	0.00E+00	0.00E+00	1.76E-06
52	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.98E-06	0.00E+00	0.00E+00	1.98E-06
53	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.73E-06	0.00E+00	0.00E+00	1.73E-06
54	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.73E-06	0.00E+00	0.00E+00	1.73E-06
55	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.54E-06	0.00E+00	0.00E+00	1.54E-06
56	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.38E-06	0.00E+00	0.00E+00	1.38E-06
57	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.10E-06	0.00E+00	0.00E+00	1.10E-06
58	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.73E-07	0.00E+00	0.00E+00	8.73E-07
59	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.60E-07	0.00E+00	0.00E+00	7.60E-07
60	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.38E-07	0.00E+00	0.00E+00	7.38E-07
61	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.14E-07	0.00E+00	0.00E+00	7.14E-07
62	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.68E-07	0.00E+00	0.00E+00	6.68E-07
63	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.10E-07	0.00E+00	0.00E+00	7.10E-07
64	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.22E-07	0.00E+00	0.00E+00	7.22E-07
65	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.23E-07	0.00E+00	0.00E+00	6.23E-07
66	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.93E-07	0.00E+00	0.00E+00	6.93E-07
67	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.63E-07	0.00E+00	0.00E+00	7.63E-07
68	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.31E-07	0.00E+00	0.00E+00	8.31E-07
69	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.59E-07	0.00E+00	0.00E+00	6.59E-07
70	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.07E-06	0.00E+00	0.00E+00	1.07E-06
71	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.06E-06	0.00E+00	0.00E+00	1.06E-06
72	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.04E-06	0.00E+00	0.00E+00	1.04E-06
73	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E-06	0.00E+00	0.00E+00	1.00E-06
74	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.05E-07	0.00E+00	0.00E+00	9.05E-07
75	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.23E-07	0.00E+00	0.00E+00	9.23E-07
76	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.98E-07	0.00E+00	0.00E+00	8.98E-07

Table B-8: HARP Output: Residential Chronic HI														
REC	CV	CNS	BONE	DEVEL	ENDO	EYE	GILV	IMMUN	KIDN	REPRO	RESP	SKIN	BLOOD	MAX
77	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.58E-07	0.00E+00	0.00E+00	8.58E-07
78	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.70E-06	0.00E+00	0.00E+00	1.70E-06
79	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.46E-06	0.00E+00	0.00E+00	1.46E-06
80	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.35E-06	0.00E+00	0.00E+00	1.35E-06
81	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.29E-06	0.00E+00	0.00E+00	1.29E-06
82	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.96E-06	0.00E+00	0.00E+00	3.96E-06
83	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.35E-05	0.00E+00	0.00E+00	1.35E-05
84	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.15E-06	0.00E+00	0.00E+00	8.15E-06
85	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.50E-06	0.00E+00	0.00E+00	2.50E-06
86	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.17E-06	0.00E+00	0.00E+00	3.17E-06
87	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.96E-06	0.00E+00	0.00E+00	2.96E-06
88	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.69E-06	0.00E+00	0.00E+00	2.69E-06
89	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.61E-06	0.00E+00	0.00E+00	7.61E-06
90	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.04E-06	0.00E+00	0.00E+00	6.04E-06
91	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.84E-06	0.00E+00	0.00E+00	6.84E-06
92	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.86E-06	0.00E+00	0.00E+00	2.86E-06
93	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E-06	0.00E+00	0.00E+00	1.50E-06
94	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.78E-06	0.00E+00	0.00E+00	8.78E-06
95	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.92E-06	0.00E+00	0.00E+00	5.92E-06
96	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.77E-06	0.00E+00	0.00E+00	3.77E-06
97	0.00E+00	0.00E+00	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-06	0.00E+00	0.00E+00	1.71E-06
98	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.73E-06	0.00E+00	0.00E+00	2.73E-06
99	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.48E-06	0.00E+00	0.00E+00	3.48E-06
100	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.77E-06	0.00E+00	0.00E+00	2.77E-06
101	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.44E-06	0.00E+00	0.00E+00	2.44E-06
102	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.47E-06	0.00E+00	0.00E+00	2.47E-06
103	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.10E-06	0.00E+00	0.00E+00	2.10E-06
104	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E-06	0.00E+00	0.00E+00	1.18E-06
105	0.00E+00	0.00E+00	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-06	0.00E+00	0.00E+00	2.08E-06
106	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E-06	0.00E+00	0.00E+00	2.30E-06
107	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.52E-06	0.00E+00	0.00E+00	2.52E-06
108	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.71E-06	0.00E+00	0.00E+00	2.71E-06
109	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.76E-06	0.00E+00	0.00E+00	2.76E-06
110	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.81E-06	0.00E+00	0.00E+00	2.81E-06
111	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.75E-06	0.00E+00	0.00E+00	1.75E-06
112	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.41E-06	0.00E+00	0.00E+00	2.41E-06
113	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.27E-06	0.00E+00	0.00E+00	2.27E-06
114	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.74E-06	0.00E+00	0.00E+00	1.74E-06
115	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.88E-06	0.00E+00	0.00E+00	1.88E-06
116	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.34E-06	0.00E+00	0.00E+00	1.34E-06
117	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.24E-06	0.00E+00	0.00E+00	1.24E-06

Table B-9: HARP Output: Worker Cancer Risk															
REC	INHAL	DERM	SOIL	MOTHER	FISH	WATER	VEG	DAIRY	BEEF	CHICK	PIG	EGG	MEAT	ORAL	TOTAL
118	3.68E-11	6.34E-10	8.24E-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	7.16E-10	7.53E-10
119	7.38E-11	1.26E-09	1.64E-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	1.43E-09	1.50E-09
120	3.87E-10	6.33E-09	8.23E-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	7.15E-09	7.54E-09
121	4.94E-11	8.35E-10	1.09E-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	9.44E-10	9.93E-10

Table B-10: HARP Output: Worker Chronic HI														
REC	CV	CNS	BONE	DEVEL	ENDO	EYE	GILV	IMMUN	KIDN	REPRO	RESP	SKIN	BLOOD	MAX
118	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.17E-07	0.00E+00	0.00E+00	4.17E-07
119	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.40E-07	0.00E+00	0.00E+00	8.40E-07
120	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.48E-06	0.00E+00	0.00E+00	4.48E-06
121	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.65E-07	0.00E+00	0.00E+00	5.65E-07

Table B-11: HARP Output: 9-year Child Cancer Risk															
REC	INHAL	DERM	SOIL	MOTHER	FISH	WATER	VEG	DAIRY	BEEF	CHICK	PIG	EGG	MEAT	ORAL	TOTAL
118	4.30E-11	4.16E-10	1.65E-10	0.00E+00	0.00E+00	0.00E+00	8.85E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E-09	1.51E-09
119	8.64E-11	8.28E-10	3.28E-10	0.00E+00	0.00E+00	0.00E+00	1.76E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.92E-09	3.00E-09

Table B-12: AERMOD Concentration Output for DPM Sources					
Easting (m)	Northing (m)	Average Concentration (ug/m3)	Averaging Period	Source Group	Hours
654835.0625	4182743.25	0.00136	PERIOD	DPM	8760
654838	4182787.5	0.00139	PERIOD	DPM	8760
654839.625	4182833.5	0.00144	PERIOD	DPM	8760
654839.625	4182896.5	0.0015	PERIOD	DPM	8760
654839.625	4182939	0.00152	PERIOD	DPM	8760
654840.4375	4182985	0.00151	PERIOD	DPM	8760
654841.25	4183031.75	0.00149	PERIOD	DPM	8760
654797.8125	4182742.5	0.00124	PERIOD	DPM	8760
654797.8125	4182801.5	0.00125	PERIOD	DPM	8760
654797	4182856.25	0.00128	PERIOD	DPM	8760
654795.375	4182898.25	0.0013	PERIOD	DPM	8760
654795.375	4182942.5	0.00132	PERIOD	DPM	8760
654794.5625	4182983.25	0.00132	PERIOD	DPM	8760
654793.75	4183030	0.00131	PERIOD	DPM	8760
654805.1875	4183096.5	0.00133	PERIOD	DPM	8760
654767.5	4183096.5	0.0012	PERIOD	DPM	8760
654725.375	4183321.75	0.00096	PERIOD	DPM	8760
654776.5625	4183323.5	0.00106	PERIOD	DPM	8760
654815.1875	4183320.75	0.00115	PERIOD	DPM	8760
654849	4183319.75	0.00124	PERIOD	DPM	8760
654903.125	4183320.75	0.0014	PERIOD	DPM	8760
654962	4183320.75	0.00163	PERIOD	DPM	8760
655033.5	4183331.25	0.0019	PERIOD	DPM	8760
655076	4183332.25	0.00202	PERIOD	DPM	8760
655118.5	4183332.25	0.00205	PERIOD	DPM	8760
655147.5	4183332.25	0.00201	PERIOD	DPM	8760
655189.0625	4183338	0.0018	PERIOD	DPM	8760
655235.4375	4183349.75	0.00154	PERIOD	DPM	8760
655279.8125	4183373.75	0.00126	PERIOD	DPM	8760
655316.5625	4183400	0.00104	PERIOD	DPM	8760
655351.3125	4183447.25	0.00079	PERIOD	DPM	8760
655372.5625	4183484	0.00066	PERIOD	DPM	8760
655339.1875	4183496.75	0.00069	PERIOD	DPM	8760
655318.6875	4183462.25	0.00081	PERIOD	DPM	8760
655282.0625	4183447.25	0.00092	PERIOD	DPM	8760
655253	4183404	0.00115	PERIOD	DPM	8760
655219.5625	4183391	0.00128	PERIOD	DPM	8760
655182.9375	4183391	0.00138	PERIOD	DPM	8760
655143.0625	4183367.5	0.00166	PERIOD	DPM	8760
655095.6875	4183365.25	0.00175	PERIOD	DPM	8760
655037.5	4183366.25	0.0017	PERIOD	DPM	8760
654983.625	4183363	0.00156	PERIOD	DPM	8760
654906.5625	4183375.25	0.00129	PERIOD	DPM	8760
654833.8125	4183373.5	0.0011	PERIOD	DPM	8760
654777.25	4183388.25	0.00096	PERIOD	DPM	8760
654722.3125	4183383.25	0.00087	PERIOD	DPM	8760
654656.0625	4183325	0.00085	PERIOD	DPM	8760

Table B-12: AERMOD Concentration Output for DPM Sources					
Easting (m)	Northing (m)	Average Concentration (ug/m3)	Averaging Period	Source Group	Hours
654614	4183326.75	0.00079	PERIOD	DPM	8760
654607.5625	4183372	0.00073	PERIOD	DPM	8760
654641.5	4183375.25	0.00077	PERIOD	DPM	8760
654690	4183409.25	0.0008	PERIOD	DPM	8760
654837.0625	4183425.25	0.00103	PERIOD	DPM	8760
654903.3125	4183469	0.00108	PERIOD	DPM	8760
654985.75	4183433.5	0.0013	PERIOD	DPM	8760
655031	4183448	0.00126	PERIOD	DPM	8760
655107	4183451.25	0.00118	PERIOD	DPM	8760
655216.875	4183470.5	0.00093	PERIOD	DPM	8760
655408.9375	4183435.75	0.00073	PERIOD	DPM	8760
655458.8125	4183485.75	0.00059	PERIOD	DPM	8760
655552	4183467	0.00062	PERIOD	DPM	8760
655604.375	4183468.5	0.00059	PERIOD	DPM	8760
655604.375	4183510.25	0.00053	PERIOD	DPM	8760
655649.25	4183465.5	0.00058	PERIOD	DPM	8760
655695.5625	4183473	0.00056	PERIOD	DPM	8760
655646.25	4183544.75	0.00047	PERIOD	DPM	8760
655728.5	4183497	0.00051	PERIOD	DPM	8760
655617.8125	4183431	0.00066	PERIOD	DPM	8760
655655.1875	4183411.75	0.00068	PERIOD	DPM	8760
655650.75	4183501.5	0.00053	PERIOD	DPM	8760
655860.0625	4183311.5	0.00078	PERIOD	DPM	8760
655922.875	4183302.5	0.00074	PERIOD	DPM	8760
655985.6875	4183302.5	0.00068	PERIOD	DPM	8760
656050.75	4183305.5	0.00061	PERIOD	DPM	8760
655855.75	4183379	0.00065	PERIOD	DPM	8760
655906.375	4183363.75	0.00064	PERIOD	DPM	8760
655979.8125	4183361.25	0.0006	PERIOD	DPM	8760
655816.0625	4183414.75	0.00061	PERIOD	DPM	8760
655866.0625	4183149.75	0.00115	PERIOD	DPM	8760
655943.9375	4183173.75	0.00094	PERIOD	DPM	8760
656063.625	4183170.25	0.00077	PERIOD	DPM	8760
656167.5	4183168.75	0.00065	PERIOD	DPM	8760
655896.375	4182828.5	0.00147	PERIOD	DPM	8760
655577.125	4182880	0.00473	PERIOD	DPM	8760
655551.8125	4182963.5	0.0052	PERIOD	DPM	8760
656101.4375	4182378.5	0.00065	PERIOD	DPM	8760
655935.5625	4182373	0.00085	PERIOD	DPM	8760
655937.0625	4182306.5	0.00076	PERIOD	DPM	8760
656000.5625	4182302.25	0.00069	PERIOD	DPM	8760
655560.4375	4182299.25	0.00132	PERIOD	DPM	8760
655527.9375	4182252	0.00113	PERIOD	DPM	8760
655461.5	4182280	0.00131	PERIOD	DPM	8760
654993.3125	4182475	0.00132	PERIOD	DPM	8760
654675.75	4182334.75	0.0006	PERIOD	DPM	8760
655324.75	4182453.25	0.00346	PERIOD	DPM	8760

Table B-12: AERMOD Concentration Output for DPM Sources					
Easting (m)	**Northing (m)**	**Average Concentration (ug/m3)**	**Averaging Period**	**Source Group**	**Hours**
655254.6875	4182439.25	0.00248	PERIOD	DPM	8760
655143.375	4182418.25	0.00165	PERIOD	DPM	8760
654729.0625	4182408	0.0007	PERIOD	DPM	8760
656046.25	4182389.5	0.00072	PERIOD	DPM	8760
655909.5	4182413.25	0.00095	PERIOD	DPM	8760
656062	4182431.5	0.00074	PERIOD	DPM	8760
656160.625	4182731.25	0.00077	PERIOD	DPM	8760
656168.5	4182657.75	0.00075	PERIOD	DPM	8760
656235.5625	4182812.75	0.0007	PERIOD	DPM	8760
656324.9375	4183178.25	0.00052	PERIOD	DPM	8760
654750.6875	4183308.5	0.00103	PERIOD	DPM	8760
654796.625	4183309.25	0.00113	PERIOD	DPM	8760
654832.5625	4183309.25	0.00122	PERIOD	DPM	8760
654877.8125	4183305.75	0.00136	PERIOD	DPM	8760
654923.75	4183309.75	0.00151	PERIOD	DPM	8760
654975	4183310.5	0.00173	PERIOD	DPM	8760
654628.6875	4183312.5	0.00083	PERIOD	DPM	8760
655056.9375	4183318.5	0.00208	PERIOD	DPM	8760
655097.375	4183317	0.00221	PERIOD	DPM	8760
655218.625	4183326	0.00182	PERIOD	DPM	8760
655565.875	4181945	0.00047	PERIOD	DPM	8760
655489.125	4181793.25	0.00035	PERIOD	DPM	8760
654772.75	4182128	0.00046	PERIOD	DPM	8760
655514.125	4183905	0.00022	PERIOD	DPM	8760
655103.5625	4183652.5	0.00061	PERIOD	DPM	8760
655848.125	4182625	0.00149	PERIOD	DPM	8760
655548.25	4183635.75	0.00039	PERIOD	DPM	8760

Table B-13: Receptor List			
ID	Easting (m)	Northing (m)	Type
1	654835.07	4182743.21	Res
2	654837.98	4182787.51	Res
3	654839.62	4182833.4	Res
4	654839.62	4182896.5	Res
5	654839.62	4182939.12	Res
6	654840.44	4182985.01	Res
7	654841.26	4183031.72	Res
8	654797.83	4182742.44	Res
9	654797.83	4182801.45	Res
10	654797.01	4182856.35	Res
11	654795.37	4182898.14	Res
12	654795.37	4182942.39	Res
13	654794.55	4182983.37	Res
14	654793.73	4183030.08	Res
15	654805.21	4183096.45	Res
16	654767.51	4183096.45	Res
17	654725.35	4183321.68	Res
18	654776.55	4183323.61	Res
19	654815.19	4183320.71	Res
20	654849	4183319.75	Res
21	654903.1	4183320.71	Res
22	654962.02	4183320.71	Res
23	655033.51	4183331.34	Res
24	655076.01	4183332.31	Res
25	655118.52	4183332.31	Res
26	655147.5	4183332.31	Res
27	655189.04	4183338.1	Res
28	655235.41	4183349.69	Res
29	655279.84	4183373.84	Res
30	655316.55	4183399.93	Res
31	655351.33	4183447.26	Res
32	655372.58	4183483.97	Res
33	655339.18	4183496.71	Res
34	655318.71	4183462.23	Res
35	655282.07	4183447.14	Res
36	655252.98	4183404.04	Res
37	655219.58	4183391.11	Res
38	655182.94	4183391.11	Res
39	655143.08	4183367.41	Res
40	655095.67	4183365.26	Res
41	655037.48	4183366.33	Res
42	654983.61	4183363.1	Res
43	654906.57	4183375.22	Res
44	654833.84	4183373.61	Res
45	654777.27	4183388.15	Res
46	654722.32	4183383.3	Res
47	654656.06	4183325.12	Res
48	654614.03	4183326.74	Res
49	654607.57	4183371.99	Res

Table B-13: Receptor List			
ID	Easting (m)	Northing (m)	Type
50	654641.51	4183375.22	Res
51	654690	4183409.16	Res
52	654837.07	4183425.32	Res
53	654903.34	4183468.96	Res
54	654985.77	4183433.41	Res
55	655031.02	4183447.95	Res
56	655106.98	4183451.18	Res
57	655216.89	4183470.58	Res
58	655408.96	4183435.83	Res
59	655458.81	4183485.68	Res
60	655552.03	4183466.99	Res
61	655604.37	4183468.48	Res
62	655604.37	4183510.36	Res
63	655649.23	4183465.49	Res
64	655695.59	4183472.97	Res
65	655646.24	4183544.75	Res
66	655728.49	4183496.9	Res
67	655617.83	4183431.1	Res
68	655655.21	4183411.66	Res
69	655650.73	4183501.38	Res
70	655860.09	4183311.46	Res
71	655922.9	4183302.49	Res
72	655985.71	4183302.49	Res
73	656050.76	4183305.46	Res
74	655855.74	4183378.91	Res
75	655906.4	4183363.72	Res
76	655979.84	4183361.18	Res
77	655816.05	4183414.64	Res
78	655866.09	4183149.83	Res
79	655943.96	4183173.86	Res
80	656063.65	4183170.26	Res
81	656167.48	4183168.81	Res
82	655896.37	4182828.49	Res
83	655577.15	4182879.97	Res
84	655551.82	4182963.55	Res
85	656101.41	4182378.5	Res
86	655935.57	4182373.07	Res
87	655937.04	4182306.61	Res
88	656000.55	4182302.18	Res
89	655560.44	4182299.23	Res
90	655527.94	4182251.97	Res
91	655461.48	4182280.03	Res
92	654993.31	4182474.98	Res
93	654675.77	4182334.68	Res
94	655324.77	4182453.26	Res
95	655254.66	4182439.24	Res
96	655143.36	4182418.2	Res
97	654729.05	4182407.9	Res
98	656046.25	4182389.5	Res

Table B-13: Receptor List			
ID	**Easting (m)**	**Northing (m)**	**Type**
99	655909.53	4182413.16	Res
100	656062.02	4182431.57	Res
101	656160.62	4182731.29	Res
102	656168.5	4182657.67	Res
103	656235.55	4182812.79	Res
104	656324.94	4183178.24	Res
105	654750.71	4183308.49	Res
106	654796.63	4183309.16	Res
107	654832.57	4183309.16	Res
108	654877.82	4183305.83	Res
109	654923.74	4183309.82	Res
110	654974.99	4183310.49	Res
111	654628.67	4183312.57	Res
112	655056.93	4183318.56	Res
113	655097.36	4183317.06	Res
114	655218.65	4183326.05	Res
115	655565.89	4181945.1	Res
116	655489.1	4181793.26	Res
117	654772.75	4182127.91	Res
118	655514.15	4183904.96	Sch/Wrk
119	655103.54	4183652.49	Sch/Wrk
120	655848.13	4182624.88	Wrk
121	655548.27	4183635.64	Wrk

Appendix C

AERMOD Modeling Files

Appendix C: AERMOD File Index

- Each of the UC_HRA* folder includes the following files:

  UC_HRA*.AD
  UC_HRA*.dat
  UC_HRA*.adi
  UC_HRA*.ADO
  UC_HRA*.bpi
  UC_HRA*.ini
  UC_HRA*.isc
  UC_HRA*.pro
  UC_HRA*.sup

Where,

* =

  0 – for year 2000 meteorological data
  1 – for year 2001 meteorological data
  2 – for year 2002 meteorological data
  3 – for year 2003 meteorological data
  4 – for year 2004 meteorological data

- Met_Data_Stockton folder includes the meteorological files for all the five years

Appendix D

HARP Modeling Files

Appendix D: HARP File Index

Folder	File Name
HARP	UC_HRA2_FOOD.XOQ
	UC_HRA2_FOOD.SRC
	UC_HRA2_FOOD.sit
	UC_HRA2_FOOD.RSK
	UC_HRA2_FOOD.ini
	UC_HRA2_FOOD.ems
HARP On-Ramp Files	UC_HRA2_FOOD_AUTOMATION_FILE.INI
	UC_HRA2_FOOD_SUMMARY_FILE.TXT
HARP- HRA Reports	Rep_Can_9yrC_DerOEH_AllRec_AllSrc_AllCh_ByRec.txt
	Rep_Can_70yr_DerAdj_AllRec_AllSrc_AllCh_ByRec.txt
	Rep_Can_WRK_Avg_AllRec_AllSrc_AllCh_ByRec.txt
	Rep_Chr_Res_DerOEH_AllRec_AllSrc_AllCh_ByRec.txt
	Rep_Chr_Wrk_PtEst_AllRec_AllSrc_AllCh_ByRec.txt

Air Modeling Results

12/17/2008 8:37:04 PM

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: H:\PROJECTS\Union Crossing\Construction URBEMIS\Union Crossing Mass Site Grading.urb924

Project Name: Union Crossing Initial Mass Site Grading

Project Location: San Joaquin County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2009 TOTALS (tons/year unmitigated)	0.21	2.15	0.97	0.00	3.67	0.10	3.77	0.77	0.09	0.86	220.22
2009 TOTALS (tons/year mitigated)	0.21	2.15	0.97	0.00	1.74	0.10	1.84	0.36	0.09	0.46	220.22
Percent Reduction	0.00	0.00	0.00	0.00	52.63	0.00	51.22	52.59	0.00	46.90	0.00

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2009	0.21	2.15	0.97	0.00	3.67	0.10	3.77	0.77	0.09	0.86	220.22
Mass Grading 05/01/2009-07/31/2009	0.21	2.15	0.97	0.00	3.67	0.10	3.77	0.77	0.09	0.86	220.22
Mass Grading Dust	0.00	0.00	0.00	0.00	3.66	0.00	3.66	0.76	0.00	0.76	0.00
Mass Grading Off Road Diesel	0.15	1.18	0.60	0.00	0.00	0.06	0.06	0.00	0.06	0.06	99.25
Mass Grading On Road Diesel	0.06	0.97	0.32	0.00	0.00	0.04	0.04	0.00	0.03	0.04	116.75
Mass Grading Worker Trips	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.22

Phase Assumptions

Phase: Mass Grading 5/1/2009 - 7/31/2009 - Initial mass site grading for overall site and cut/fill.

Total Acres Disturbed: 50.25

Maximum Daily Acreage Disturbed: 8.38

Fugitive Dust Level of Detail: High

Onsite Haulage: 486.9 ton-miles/day; Offsite haulage: 0 ton-mils/day

On Road Truck Travel (VMT): 878.79

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2009	0.21	2.15	0.97	0.00	1.74	0.10	1.84	0.36	0.09	0.46	220.22
Mass Grading 05/01/2009-07/31/2009	0.21	2.15	0.97	0.00	1.74	0.10	1.84	0.36	0.09	0.46	220.22
Mass Grading Dust	0.00	0.00	0.00	0.00	1.73	0.00	1.73	0.36	0.00	0.36	0.00
Mass Grading Off Road Diesel	0.15	1.18	0.60	0.00	0.00	0.06	0.06	0.00	0.06	0.06	99.25
Mass Grading On Road Diesel	0.06	0.97	0.32	0.00	0.00	0.04	0.04	0.00	0.03	0.04	116.75
Mass Grading Worker Trips	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.22

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/1/2009 - 7/31/2009 - Initial mass site grading for overall site and cut/fill.

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

Estimated Ton-Miles of Exported Soil
(Input for High-Level of Detail for Fugitive Dust from Off-Site Haulage in URBEMIS)

Project Name:	Input	Union Crossing	
Building ID:	Input	Balanced Cut/Fill Operations	

Excavation
Number of Haul Trucks per Day

Total Cut/Fill Volume	Input	50,000	CY
Total Number of Haul Trucks		2,500	
Number of Months for Excavation	Input	3.0	
Haul Truck Trips per Day		38	

Soil Type	Dry Density (g/cm3)
Sand	1.52
Sandy Loam	1.44
Loam	1.36
Silt Loam	1.28
Clay Loam	1.28
Clay	1.20

Note: Dry density in most soils varies within the range 1.1 to 1.6

Ton-Mile per Day Calculation

Soil Type	Input	Sand	
Soil Density (g/m3)		1.52	g/cm3
Soil Density (lbs/CY)		2,562	lbs/CY
Soil Density (tons/CY)		1.28	tons/CY
Haul Distance (Round Trip On-Site)	Input	0.50	Miles
Ton-Miles per Day		486.9	<----------> Haul truck trips per day * 20 CY/truck * tons/CY * miles/trip

12/15/2008 5:08:50 PM

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: H:\PROJECTS\Union Crossing\Construction URBEMIS\Phase I Construction.urb924

Project Name: Union Crossing Phase 1 Construction

Project Location: San Joaquin County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2009 TOTALS (tons/year unmitigated)	1.19	2.47	2.71	0.00	0.61	0.17	0.78	0.13	0.16	0.29	327.11
2009 TOTALS (tons/year mitigated)	1.19	2.47	2.71	0.00	0.29	0.17	0.47	0.06	0.16	0.22	327.11
Percent Reduction	0.00	0.00	0.00	0.00	52.14	0.00	40.56	51.76	0.00	23.05	0.00
2010 TOTALS (tons/year unmitigated)	1.95	1.04	1.56	0.00	0.00	0.07	0.08	0.00	0.06	0.07	187.36
2010 TOTALS (tons/year mitigated)	1.95	1.04	1.56	0.00	0.00	0.07	0.08	0.00	0.06	0.07	187.36
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2009	1.19	2.47	2.71	0.00	0.61	0.17	0.78	0.13	0.16	0.29	327.11
Fine Grading 06/01/2009-06/30/2009	0.05	0.39	0.22	0.00	0.60	0.02	0.62	0.13	0.02	0.15	34.49
Fine Grading Dust	0.00	0.00	0.00	0.00	0.60	0.00	0.60	0.13	0.00	0.13	0.00
Fine Grading Off Road Diesel	0.05	0.39	0.20	0.00	0.00	0.02	0.02	0.00	0.02	0.02	33.08
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.41
Asphalt 07/01/2009-10/31/2009	0.13	0.73	0.48	0.00	0.00	0.06	0.06	0.00	0.06	0.06	63.20
Paving Off-Gas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.12	0.69	0.37	0.00	0.00	0.06	0.06	0.00	0.05	0.05	49.80
Paving On Road Diesel	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.39
Paving Worker Trips	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.00
Building 07/01/2009-05/31/2010	0.30	1.35	2.00	0.00	0.01	0.09	0.10	0.00	0.08	0.09	228.58
Building Off Road Diesel	0.26	1.14	0.76	0.00	0.00	0.08	0.08	0.00	0.08	0.08	107.00
Building Vendor Trips	0.01	0.14	0.12	0.00	0.00	0.01	0.01	0.00	0.01	0.01	24.05
Building Worker Trips	0.04	0.06	1.12	0.00	0.00	0.00	0.01	0.00	0.00	0.00	97.54
Coating 11/02/2009-05/31/2010	0.71	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84
Architectural Coating	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84

2010	1.95	1.04	1.56	0.00	0.00	0.07	0.08	0.00	0.06	0.07	187.36
Building 07/01/2009-05/31/2010	0.23	1.04	1.54	0.00	0.00	0.07	0.07	0.00	0.06	0.07	185.31
Building Off Road Diesel	0.20	0.89	0.60	0.00	0.00	0.06	0.06	0.00	0.06	0.06	86.73
Building Vendor Trips	0.01	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.50
Building Worker Trips	0.03	0.05	0.85	0.00	0.00	0.00	0.01	0.00	0.00	0.00	79.08
Coating 11/02/2009-05/31/2010	1.71	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.05
Architectural Coating	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.05

Phase Assumptions

Phase: Fine Grading 6/1/2009 - 6/30/2009 - Northern Retail Site Grading (21.91 ac)

Total Acres Disturbed: 21.91

Maximum Daily Acreage Disturbed: 5.48

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 7/1/2009 - 10/31/2009 - Paving for access paths and 987 parking spots

Acres to be Paved: 7.36

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

Phase: Building Construction 7/1/2009 - 5/31/2010 - Bldg construction for Phase 1 (225.8 ksf)

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 11/2/2009 - 5/31/2010 - AC for Phase 1 uses

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2009	1.19	2.47	2.71	0.00	0.29	0.17	0.47	0.06	0.16	0.22	327.11
Fine Grading 06/01/2009-06/30/2009	0.05	0.39	0.22	0.00	0.29	0.02	0.31	0.06	0.02	0.08	34.49
Fine Grading Dust	0.00	0.00	0.00	0.00	0.29	0.00	0.29	0.06	0.00	0.06	0.00
Fine Grading Off Road Diesel	0.05	0.39	0.20	0.00	0.00	0.02	0.02	0.00	0.02	0.02	33.08
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.41
Asphalt 07/01/2009-10/31/2009	0.13	0.73	0.48	0.00	0.00	0.06	0.06	0.00	0.06	0.06	63.20
Paving Off-Gas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.12	0.69	0.37	0.00	0.00	0.06	0.06	0.00	0.05	0.05	49.80
Paving On Road Diesel	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.39
Paving Worker Trips	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.00
Building 07/01/2009-05/31/2010	0.30	1.35	2.00	0.00	0.01	0.09	0.10	0.00	0.08	0.09	228.58
Building Off Road Diesel	0.26	1.14	0.76	0.00	0.00	0.08	0.08	0.00	0.08	0.08	107.00
Building Vendor Trips	0.01	0.14	0.12	0.00	0.00	0.01	0.01	0.00	0.01	0.01	24.05
Building Worker Trips	0.04	0.06	1.12	0.00	0.00	0.00	0.01	0.00	0.00	0.00	97.54
Coating 11/02/2009-05/31/2010	0.71	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84
Architectural Coating	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84

2010	1.95	1.04	1.56	0.00	0.00	0.07	0.08	0.00	0.06	0.07	187.36
Building 07/01/2009-05/31/2010	0.23	1.04	1.54	0.00	0.00	0.07	0.07	0.00	0.06	0.07	185.31
Building Off Road Diesel	0.20	0.89	0.60	0.00	0.00	0.06	0.06	0.00	0.06	0.06	86.73
Building Vendor Trips	0.01	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.50
Building Worker Trips	0.03	0.05	0.85	0.00	0.00	0.00	0.01	0.00	0.00	0.00	79.08
Coating 11/02/2009-05/31/2010	1.71	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.05
Architectural Coating	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.05

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 6/1/2009 - 6/30/2009 - Northern Retail Site Grading (21.91 ac)

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

12/15/2008 5:11:01 PM

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: H:\PROJECTS\Union Crossing\Construction URBEMIS\Phase II Construction.urb924

Project Name: Union Cross Phase II Construction

Project Location: San Joaquin County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2010 TOTALS (tons/year unmitigated)	0.71	2.20	2.27	0.00	0.48	0.16	0.63	0.10	0.14	0.24	290.64
2010 TOTALS (tons/year mitigated)	0.71	2.20	2.27	0.00	0.23	0.16	0.38	0.05	0.14	0.19	290.64
Percent Reduction	0.00	0.00	0.00	0.00	52.13	0.00	39.31	51.74	0.00	21.36	0.00
2011 TOTALS (tons/year unmitigated)	2.13	2.31	3.09	0.00	0.01	0.16	0.17	0.00	0.15	0.15	401.58
2011 TOTALS (tons/year mitigated)	2.13	2.31	3.09	0.00	0.01	0.16	0.17	0.00	0.15	0.15	401.58
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2010	0.71	2.20	2.27	0.00	0.48	0.16	0.63	0.10	0.14	0.24	290.64
Fine Grading 06/01/2010-06/30/2010	0.03	0.28	0.15	0.00	0.47	0.01	0.49	0.10	0.01	0.11	25.85
Fine Grading Dust	0.00	0.00	0.00	0.00	0.47	0.00	0.47	0.10	0.00	0.10	0.00
Fine Grading Off Road Diesel	0.03	0.27	0.14	0.00	0.00	0.01	0.01	0.00	0.01	0.01	24.72
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.13
Asphalt 07/01/2010-10/31/2010	0.12	0.68	0.46	0.00	0.00	0.06	0.06	0.00	0.05	0.05	61.60
Paving Off-Gas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.11	0.65	0.36	0.00	0.00	0.06	0.06	0.00	0.05	0.05	49.24
Paving On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.46
Paving Worker Trips	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.90
Building 07/01/2010-12/31/2011	0.28	1.24	1.65	0.00	0.00	0.09	0.09	0.00	0.08	0.08	202.86
Building Off Road Diesel	0.24	1.09	0.74	0.00	0.00	0.08	0.08	0.00	0.07	0.07	107.00
Building Vendor Trips	0.01	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.96
Building Worker Trips	0.03	0.04	0.82	0.00	0.00	0.00	0.01	0.00	0.00	0.00	76.91
Coating 11/01/2010-12/31/2011	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
Architectural Coating	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34

2011	2.13	2.31	3.09	0.00	0.01	0.16	0.17	0.00	0.15	0.15	401.58
Building 07/01/2010-12/31/2011	0.50	2.31	3.07	0.00	0.01	0.16	0.17	0.00	0.15	0.15	399.64
Building Off Road Diesel	0.44	2.04	1.41	0.00	0.00	0.15	0.15	0.00	0.14	0.14	210.76
Building Vendor Trips	0.02	0.19	0.16	0.00	0.00	0.01	0.01	0.00	0.01	0.01	37.35
Building Worker Trips	0.05	0.08	1.50	0.00	0.01	0.00	0.01	0.00	0.00	0.01	151.53
Coating 11/01/2010-12/31/2011	1.63	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.94
Architectural Coating	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.94

Phase Assumptions

Phase: Fine Grading 6/1/2010 - 6/30/2010 - Site grading for 17.22 acres

Total Acres Disturbed: 17.21

Maximum Daily Acreage Disturbed: 4.3

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 7/1/2010 - 10/31/2010 - Paving for 777 parking spaces

Acres to be Paved: 5.8

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

Phase: Building Construction 7/1/2010 - 12/31/2011 - Central Retail Site (178 ksf)

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 11/1/2010 - 12/31/2011 - Architectural coatings for Central Retail Site

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2010	0.71	2.20	2.27	0.00	0.23	0.16	0.38	0.05	0.14	0.19	290.64
Fine Grading 06/01/2010-06/30/2010	0.03	0.28	0.15	0.00	0.22	0.01	0.24	0.05	0.01	0.06	25.85
Fine Grading Dust	0.00	0.00	0.00	0.00	0.22	0.00	0.22	0.05	0.00	0.05	0.00
Fine Grading Off Road Diesel	0.03	0.27	0.14	0.00	0.00	0.01	0.01	0.00	0.01	0.01	24.72
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.13
Asphalt 07/01/2010-10/31/2010	0.12	0.68	0.46	0.00	0.00	0.06	0.06	0.00	0.05	0.05	61.60
Paving Off-Gas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.11	0.65	0.36	0.00	0.00	0.06	0.06	0.00	0.05	0.05	49.24
Paving On Road Diesel	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.46
Paving Worker Trips	0.00	0.01	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.90
Building 07/01/2010-12/31/2011	0.28	1.24	1.65	0.00	0.00	0.09	0.09	0.00	0.08	0.08	202.86
Building Off Road Diesel	0.24	1.09	0.74	0.00	0.00	0.08	0.08	0.00	0.07	0.07	107.00
Building Vendor Trips	0.01	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.96
Building Worker Trips	0.03	0.04	0.82	0.00	0.00	0.00	0.01	0.00	0.00	0.00	76.91
Coating 11/01/2010-12/31/2011	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
Architectural Coating	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34

2011	2.13	2.31	3.09	0.00	0.01	0.16	0.17	0.00	0.15	0.15	401.58
Building 07/01/2010-12/31/2011	0.50	2.31	3.07	0.00	0.01	0.16	0.17	0.00	0.15	0.15	399.64
Building Off Road Diesel	0.44	2.04	1.41	0.00	0.00	0.15	0.15	0.00	0.14	0.14	210.76
Building Vendor Trips	0.02	0.19	0.16	0.00	0.00	0.01	0.01	0.00	0.01	0.01	37.35
Building Worker Trips	0.05	0.08	1.50	0.00	0.01	0.00	0.01	0.00	0.00	0.01	151.53
Coating 11/01/2010-12/31/2011	1.63	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.94
Architectural Coating	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.94

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 6/1/2010 - 6/30/2010 - Site grading for 17.22 acres

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: H:\PROJECTS\Union Crossing\Construction URBEMIS\Phase III Construction.urb924

Project Name: Union Crossing Phase III Construction

Project Location: San Joaquin County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2012 TOTALS (tons/year unmitigated)	0.97	2.39	2.00	0.00	0.16	0.17	0.32	0.03	0.15	0.18	298.17
2012 TOTALS (tons/year mitigated)	0.97	2.39	2.00	0.00	0.07	0.17	0.24	0.02	0.15	0.17	298.17
Percent Reduction	0.00	0.00	0.00	0.00	51.86	0.00	25.11	51.29	0.00	9.10	0.00

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2

2012	0.97	2.39	2.00	0.00	0.16	0.17	0.32	0.03	0.15	0.18	298.17
Fine Grading 01/01/2012-01/31/2012	0.03	0.24	0.14	0.00	0.15	0.01	0.16	0.03	0.01	0.04	25.85
Fine Grading Dust	0.00	0.00	0.00	0.00	0.15	0.00	0.15	0.03	0.00	0.03	0.00
Fine Grading Off Road Diesel	0.03	0.24	0.13	0.00	0.00	0.01	0.01	0.00	0.01	0.01	24.72
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.13
Asphalt 02/01/2012-03/31/2012	0.05	0.32	0.24	0.00	0.00	0.03	0.03	0.00	0.02	0.02	32.92
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.05	0.31	0.19	0.00	0.00	0.03	0.03	0.00	0.02	0.02	27.35
Paving On Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.17
Paving Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.40
Building 02/01/2012-12/31/2012	0.39	1.83	1.62	0.00	0.00	0.13	0.13	0.00	0.12	0.12	238.81
Building Off Road Diesel	0.37	1.77	1.26	0.00	0.00	0.12	0.12	0.00	0.11	0.11	193.73
Building Vendor Trips	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.91
Building Worker Trips	0.01	0.02	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.17
Coating 06/01/2012-12/31/2012	0.50	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59
Architectural Coating	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59

Phase Assumptions

Phase: Fine Grading 1/1/2012 - 1/31/2012 - Grading for 5.55 acres

Total Acres Disturbed: 5.55

Maximum Daily Acreage Disturbed: 1.39

Fugitive Dust Level of Detail: Default

10 lbs per acre-day

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On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 2/1/2012 - 3/31/2012 - Asphalt paving for 263 parking spots

Acres to be Paved: 1.96

Off-Road Equipment:

4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day

1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day

1 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 2/1/2012 - 12/31/2012 - Bldg construction for Phase III uses (46.2 ksf)

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day

2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 6/1/2012 - 12/31/2012 - AC for Phase III uses

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2012	0.97	2.39	2.00	0.00	0.07	0.17	0.24	0.02	0.15	0.17	298.17
Fine Grading 01/01/2012-01/31/2012	0.03	0.24	0.14	0.00	0.07	0.01	0.08	0.02	0.01	0.03	25.85
Fine Grading Dust	0.00	0.00	0.00	0.00	0.07	0.00	0.07	0.02	0.00	0.02	0.00
Fine Grading Off Road Diesel	0.03	0.24	0.13	0.00	0.00	0.01	0.01	0.00	0.01	0.01	24.72
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.13
Asphalt 02/01/2012-03/31/2012	0.05	0.32	0.24	0.00	0.00	0.03	0.03	0.00	0.02	0.02	32.92
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.05	0.31	0.19	0.00	0.00	0.03	0.03	0.00	0.02	0.02	27.35
Paving On Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.17
Paving Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.40
Building 02/01/2012-12/31/2012	0.39	1.83	1.62	0.00	0.00	0.13	0.13	0.00	0.12	0.12	238.81
Building Off Road Diesel	0.37	1.77	1.26	0.00	0.00	0.12	0.12	0.00	0.11	0.11	193.73
Building Vendor Trips	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.91
Building Worker Trips	0.01	0.02	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.17
Coating 06/01/2012-12/31/2012	0.50	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59
Architectural Coating	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.59

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Fine Grading 1/1/2012 - 1/31/2012 - Grading for 5.55 acres

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:

PM10: 44% PM25: 44%

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: H:\PROJECTS\Union Crossing\Union Crossing Operational Emissions.urb924

Project Name: Union Crossing Operational Emissions

Project Location: San Joaquin County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	0.55	0.79	0.81	0.00	0.00	0.00	952.90

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	17.74	24.47	177.16	0.15	13.35	3.06	15,416.35

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	18.29	25.26	177.97	0.15	13.35	3.06	16,369.25

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.06	0.79	0.67	0.00	0.00	0.00	952.65
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscape	0.01	0.00	0.14	0.00	0.00	0.00	0.25
Consumer Products	0.00						
Architectural Coatings	0.48						
TOTALS (tons/year, unmitigated)	0.55	0.79	0.81	0.00	0.00	0.00	952.90

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Strip mall	17.74	24.47	177.16	0.15	13.35	3.06	15,416.35
TOTALS (tons/year, unmitigated)	17.74	24.47	177.16	0.15	13.35	3.06	15,416.35

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

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Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Strip mall		45.90	1000 sq ft	450.00	20,655.00	84,215.38
					20,655.00	84,215.38

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	45.5	0.7	99.1	0.2
Light Truck < 3750 lbs	11.5	1.7	93.1	5.2
Light Truck 3751-5750 lbs	21.1	0.5	99.5	0.0
Med Truck 5751-8500 lbs	11.4	0.9	99.1	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	0.7	0.0	42.9	57.1
Med-Heavy Truck 14,001-33,000 lbs	1.1	0.0	18.2	81.8
Heavy-Heavy Truck 33,001-60,000 lbs	1.6	0.0	0.0	100.0
Other Bus	0.0	0.0	0.0	0.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.8	55.3	44.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.0	0.0	90.0	10.0

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Strip mall				2.0	1.0	97.0

Union Crossing
SJVAPCD Rule 9510 Calculations

Construction Emissions

Year	Phase	Exhaust Emissions (tons/year) NOX	PM10
2009	Mass Grading	2.15	0.10
2009	Phase I	2.47	0.18
2010	Phase I	1.05	0.07
2010	Phase II	2.2	0.16
2011	Phase II	2.31	0.17
2012	Phase III	2.39	0.16
Total		12.57	0.84
Rule 9510 Reductions		2.51	0.38
Mitigated Total		10.06	0.46

Emission Reductions NOX	PM10
20%	45%

Operational Emissions

Source	Emissions (tons/year) NOX	PM10
Proposed Project (2013)	25.26	13.35
Rule 9510 Reductions	8.42	6.68
Mitigated Total	16.84	6.68

Emission Reductions NOX	PM10
33%	50%

Appendix Union Crossing GHG Emissions Calculations

URBEMIS Output Summary	CO2 Estimates(lb/day)		Conversion Factors		Total CO2 Emissions	
Construction Emissions						
2009 Mass Site Grading	322	tons/yr	0.907	metric ton/english ton	292	Metric tons/year
2009 Phase 1	327	tons/yr	0.907	metric ton/english ton	297	Metric tons/year
2010 Phase 1	187	tons/yr	0.907	metric ton/english ton	170	Metric tons/year
2010 Phase 2	291	tons/yr	0.907	metric ton/english ton	264	Metric tons/year
2011 Phase 2	402	tons/yr	0.907	metric ton/english ton	365	Metric tons/year
2012 Phase 3	298	tons/yr	0.907	metric ton/english ton	270	Metric tons/year
					1,657	Metric tons
Area-Source Emissions						
Operational Year 2013	953	tons/yr	0.907	metric ton/english ton	864	Metric tons/year
Mobile-Source Emissions						
Operational Year 2013	15,416	tons/yr	0.907	metric ton/english ton	13,983	Metric tons/year
Total Direct Operational Emissions					**14,847**	Metric tons/year

Indirect Emissions from Electricity Consumption

KWh/du/year	# du	KWh/ksf/year	# ksf Commercial	Total KWh	MWh	Region	Emission Factor (lb CO2/MWh)	GWP	Emission Factor (lb CH4/MWh)	GWP	Emission Factor (lb N2O/MWh)	GWP	Total CO2e (Metric Tons/year)
7,000	0	16,750	450	7,537,500	7,538	CALI	804.54	1	0.0067	23	0.0037	296	**2,755**

Indirect Emissions from Water Use (includes conveyance, treatment, distribution, and wastewater treatment)

KWh/million gallons/year*	KWh/acre-ft/year	acre-ft/year	Total KWh	MWh	Region	Emission Factor (lb CO2/MWh)	GWP	Emission Factor (lb CH4/MWh)	GWP	Emission Factor (lb N2O/MWh)	GWP	Total CO2e (Metric Tons/year)
3,950	1287	131	168,679	169	CALI	804.54	1	0.0067	23	0.0037	296	**62**

*for Northern California; Southern California estimates 12,700 KWh/MG/year

Total Indirect Emissions	**2,817**
Total Direct & Indirect Emissions	**17,664**

Assumptions:

130 gallons/employee/day (GED) for retail uses

500 sf retail/employee

3.069 acre-ft = 1 Million gallon

Sources:

California Energy Commission [CEC] 2000. California Energy Demand Staff Report P200-00-002

California Climate Action Registry [CCAR] General Reporting Protocol v 2.2 March 2007

California Energy Commission [CEC] 2005. California Energy - Water Relationship Staff Report CEC-700-2005-011-SF

Gleick, Peter. 2003 Waste Not, Want Not: The Potential for Urban Water Conservation in California. Pacific Institute. November 2003.

Appendix C

AERMOD Modeling Files

Appendix C: AERMOD File Index

- Each of the UC_HRA* folder includes the following files:

  UC_HRA*.AD
  UC_HRA*.dat
  UC_HRA*.adi
  UC_HRA*.ADO
  UC_HRA*.bpi
  UC_HRA*.ini
  UC_HRA*.isc
  UC_HRA*.pro
  UC_HRA*.sup

Where,

* =

  0 – for year 2000 meteorological data
  1 – for year 2001 meteorological data
  2 – for year 2002 meteorological data
  3 – for year 2003 meteorological data
  4 – for year 2004 meteorological data

- Met_Data_Stockton folder includes the meteorological files for all the five years

Appendix D

HARP Modeling Files

Appendix D: HARP File Index

Folder	File Name
HARP	UC_HRA2_FOOD.XOQ
	UC_HRA2_FOOD.SRC
	UC_HRA2_FOOD.sit
	UC_HRA2_FOOD.RSK
	UC_HRA2_FOOD.ini
	UC_HRA2_FOOD.ems
HARP On-Ramp Files	UC_HRA2_FOOD_AUTOMATION_FILE.INI
	UC_HRA2_FOOD_SUMMARY_FILE.TXT
HARP- HRA Reports	Rep_Can_9yrC_DerOEH_AllRec_AllSrc_AllCh_ByRec.txt
	Rep_Can_70yr_DerAdj_AllRec_AllSrc_AllCh_ByRec.txt
	Rep_Can_WRK_Avg_AllRec_AllSrc_AllCh_ByRec.txt
	Rep_Chr_Res_DerOEH_AllRec_AllSrc_AllCh_ByRec.txt
	Rep_Chr_Wrk_PtEst_AllRec_AllSrc_AllCh_ByRec.txt