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APPENDIX H

Health Risk Assessment

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**HEALTH RISK ASSESSMENT**  
**Azevedo Dairy #4 Expansion**

**1257 W. Roosevelt Road**  
**El Nido, CA 95317**  
**Merced County**

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## TABLE OF CONTENTS

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<b>1. EXECUTIVE SUMMARY</b>	<b>1-1</b>
<b>2. INTRODUCTION</b>	<b>2-1</b>
<b>2.1. Project Description</b> .....	<b>2-2</b>
<b>3. RISK ASSESSMENT METHODOLOGY</b>	<b>3-1</b>
<b>3.1. Hazard Identification</b> .....	<b>3-1</b>
<b>3.2. Exposure Assessment</b> .....	<b>3-3</b>
3.2.1. <i>Source Emissions and Characterization</i> .....	3-3
3.2.2. <i>Dispersion Modeling</i> .....	3-4
3.2.3. <i>HARP Post-Processing</i> .....	3-5
<b>3.3. Risk Characterization</b> .....	<b>3-5</b>
<b>4. CONCLUSIONS</b>	<b>4-1</b>
<b>5. REFERENCES</b>	<b>5-2</b>
<b>APPENDIX A: EMISSION ESTIMATION WORKSHEETS</b>	<b>A-1</b>
<b>APPENDIX B: AERMOD AND HARP2 ELECTRONIC FILES</b>	<b>B-1</b>

## LIST OF FIGURES

---

Figure 2-1. Location Map.....	2-1
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## LIST OF TABLES

---

Table 2-1. Herd Configuration – Existing and Proposed.....	2-2
Table 3-1. Sources of Potential Emissions .....	3-1
Table 3-2. Chemicals of Potential Concern .....	3-2
Table 3-3. Risk Predicted By HARP .....	3-6
Table 3-4. Risk by Pollutant – Maximum Cancer Risk at Receptor #1 .....	3-7
Table 3-5. Risk by Pollutant – Maximum Acute Noncancer Risk at Receptor #1 .....	3-8
Table 3-6. Risk by Pollutant – Maximum Chronic Noncancer Risk at Receptor #1.....	3-9

## 1. EXECUTIVE SUMMARY

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This document contains the health risk assessment performed on behalf of Environmental Planning Partners, Inc. for an expansion of the existing Azevedo Dairy #4 operation in Merced County, California. As part of the development requirements for the project, an assessment is required of the potential risk to the population attributable to emissions of hazardous air pollutants from the proposed dairy expansion.

Emissions of hazardous air pollutants attributable to proposed increases in construction activities, animal movement, manure management and on-site mobile sources were calculated using generally accepted emission factors and the California Emissions Estimator Model version 2016.3.2 (CalEEMod). Ambient air concentrations were predicted with dispersion modeling to arrive at a conservative estimate of increased individual carcinogenic risk that might occur as a result of continuous exposure over a 70-year lifetime. Similarly, concentrations of compounds with non-cancer adverse health effects were used to calculate hazard indices (HIs), which are the ratio of expected exposure to acceptable exposure.

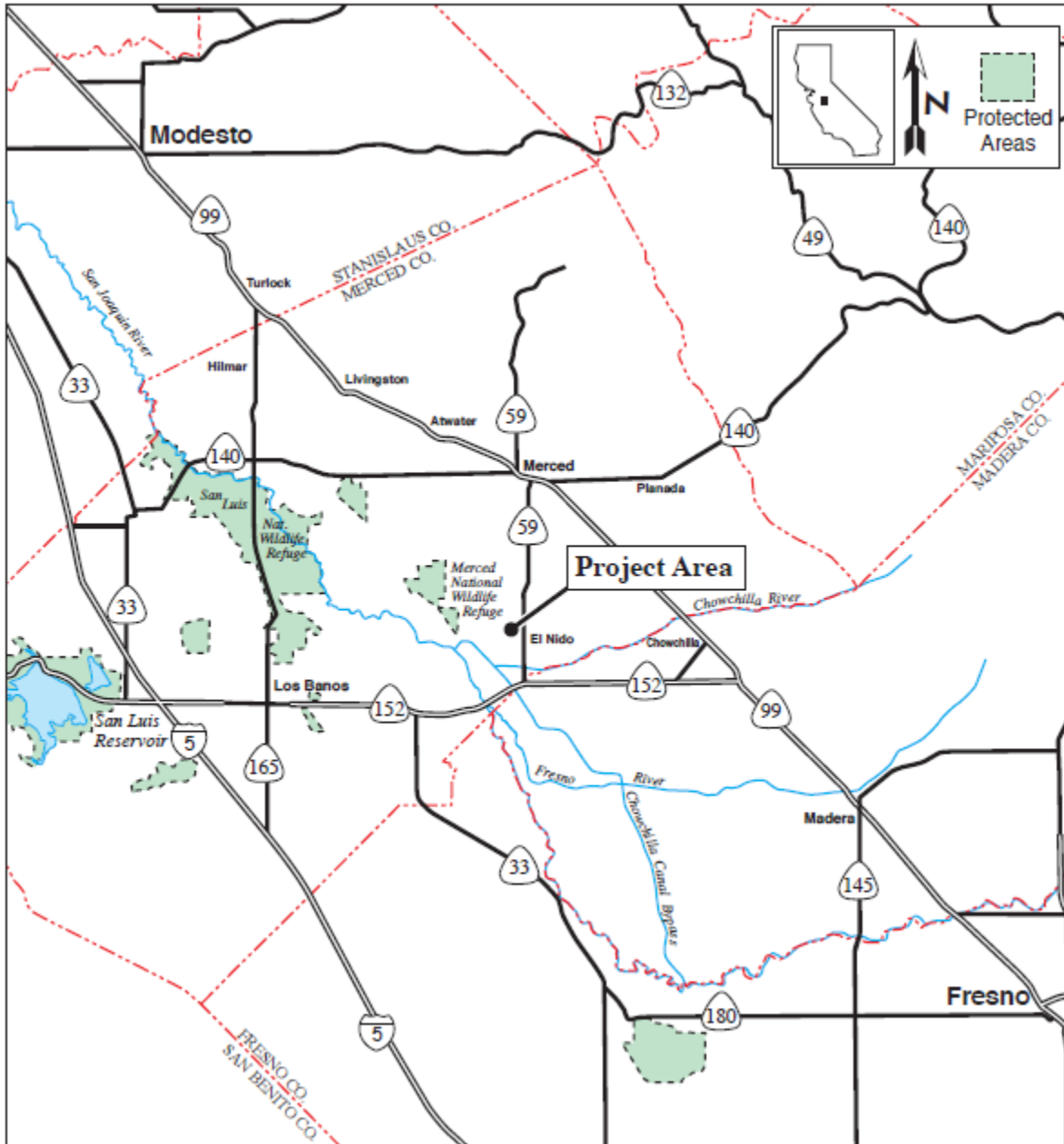
The San Joaquin Valley Air Pollution Control District (SJVAPCD) has set the level of significance for carcinogenic risk to twenty in one million ( $20 \times 10^{-6}$ ), which is understood as the possibility of causing twenty additional cancer cases in a population of one million people. The level of significance for acute and chronic non-cancer risk is a hazard index of 1.0. The maximum predicted cancer risk among the modeled receptors is 13.5 in one million, which is below the significance level of twenty in one million. The maximum predicted acute and chronic non-cancer hazard indices among the modeled receptors are 0.710 and 0.252, respectively, which is below the significance level for chronic and acute significance level.

In accordance with the SJVAPCD's *Guide for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2015a) and policies (SJVAPCD 2015b; SJVAPCD 2015c) the potential health risk attributable to the proposed project is determined to be less than significant.

## 2. INTRODUCTION

This Health Risk Assessment (HRA) is provided as a service of Insight Environmental Consultants, Inc., a Trinity Consultants company, performed on behalf of Environmental Planning Partners, Inc. for an expansion of the existing Azevedo Dairy #4 operation in Merced County, California (**Figure 2-1**). As part of the development requirements for the property, an HRA is required.

Figure 2-1. Location Map



## 2.1. PROJECT DESCRIPTION

The existing dairy is located at 1257 W Roosevelt Road in El Nido, California, which is in the County of Merced. The facility will not be located within 1,000 feet of a K-12 school.

The proposed structure construction would occur within one phase. Construction would include the construction of three new barns totaling 143,950 square feet, a new feed storage area, a new manure storage area, a new mechanical separator and two new wastewater storage ponds and would take approximately four months of construction time within the first five years after application approval.

After modification, the dairy will house approximately 4,000 head of cattle. The existing and proposed herd configuration is provided in Table 2-1. The dairy will continue to operate 24 hours per day and 365 days per year.

**Table 2-1. Herd Configuration - Existing and Proposed**

	<b>Current</b>	<b>Proposed</b>	<b>Increment</b>
Milk Cows	370	2,500	2,130
Dry Cows	61	500	439
Bred Heifers 15-24 mos.	640	334	-306
Heifers 7-14 mos.	599	333	-266
Heifers 4-6 mos.	60	333	273
Calves 0-3 mos.	0	0	0
Bulls	0	0	0
<b>TOTAL</b>	<b>1,730</b>	<b>4,000</b>	<b>2,270</b>



### 3. RISK ASSESSMENT METHODOLOGY

This section describes the methodology used to predict the potential health risk to the population attributable to emissions of hazardous air pollutants from the proposed expansion of the dairy operation.

#### 3.1. HAZARD IDENTIFICATION

The basis for evaluating potential health risk is the identification of sources of hazardous air pollutants (HAPs). The proposed dairy will include sources with the potential to emit HAPs. Pursuant to guidance by the San Joaquin Valley Air Pollution Control District<sup>1</sup> (SVAPCD), emissions based on the current configuration of the dairy are considered to be existing emissions. Based on this fact, the facility's existing emissions are not included in the emissions proposed for the subject project. Therefore, emissions from the dairy modifications will be restricted to incremental emissions attributable to construction activities, animal movement, manure management, and land application of wastewater based on the proposed increase in the number of cattle (**Table 2-1**) and the additional on-site mobile sources required for the expansion.

Construction equipment sources include diesel-fueled dozers, loaders, backhoes, excavators, graders, cranes, forklifts, generator sets, concrete/industrial saws, and welders. CalEEMod default equipment listing for general light industrial usages were utilized. Default horsepower, daily operating hours, and load factors were also used. Operational mobile sources include a diesel-fueled feed loading tractor, a manure loading tractor, a feed delivery tractor, a bedding delivery tractor, manure scraping tractor, milk tankers, solids manure removal trucks, silage transport trucks and commodity delivery trucks. The increased herd size will require additional tractor use for feed loading and delivery, bedding delivery, manure scraping and solid manure loading. Additional truck trips will be required for solid manure removal trucks, milk tankers and commodity delivery trucks. There will also be emission increases from the housing barns, milk barn, lagoons, solid manure storage and land application areas associated with increased herd size. HRA emission sources HRA are listed in **Table 3-1**.

**Table 3-1. Sources of Potential Emissions**

Source ID	Description
MTI	Milk Truck Idling
SMTI	Solid Manure Truck Idling
FLT	Feed Loading Tractor
MLT	Manure Loading Tractor
MTT	Milk Truck Travel
SMTT	Solid Manure Truck Travel
FBTD1-2	Feed and Bedding Tractor Delivery
SB1-6	Housing Barns
CTT	Commodity Truck Travel
SMS	Solid Manure Storage
MILK1	Milk Barn
SLA, LLA	Solids and Liquid Land Application
WWP1	Wastewater Ponds
CONST	Construction Activities
CTI	Commodity Truck Idling
MST	Manure Scraping Tractor

<sup>1</sup> Personal Communication with Leland Villalvazo, San Joaquin Valley Air Pollution Control District, June 15, 2007.

**Table 3-2** lists the toxic substances emitted from each of these activities and also presents the classification of these species as to their potential for producing carcinogenic and non-cancer acute or chronic health impacts, if any.

**Table 3-2. Chemicals of Potential Concern**

CAS	Pollutant	Source	Cancer	Non-Cancer	
				Acute	Chronic
9901	Diesel Exhaust, Particulate Matter	Tractors, Diesel Trucks	X		X
9960	Sulfates	Animal Movement		X	X
50000	Formaldehyde	Animal Movement	X	X	X
56235	Carbon tetrachloride	Animal Movement, Lagoons	X	X	X
67630	Isopropyl Alcohol	Animal Movement		X	X
67663	Chloroform	Animal Movement, Lagoons	X	X	X
71432	Benzene	Animal Movement, Lagoons	X	X	X
71556	1,1,1-trichloroethane	Lagoons		X	X
74873	Methyl Chloride	Animal Movement	X	X	X
75003	Ethyl Chloride	Animal Movement			X
75070	Acetaldehyde	Animal Movement	X		X
75150	Carbon disulfide	Animal Movement		X	X
75252	Tribromomethane *	Lagoons			
75694	Trichloromonofluoromethane *	Lagoons			
76131	1,1,2-Trichloro-1,2,2-trifluoroethane	Lagoons			X
78933	Methyl Ethyl Ketone (MEK)	Animal Movement, Lagoons		X	X
79005	1,1,2-Trichloroethane	Animal Movement	X		
79016	Trichloroethylene	Animal Movement, Lagoons	X		X
79345	1,1,2,2-Tetrachloroethane	Animal Movement	X		
91203	Naphthalene	Animal Movement	X		X
95501	1,2-Dichlorobenzene *	Animal Movement, Lagoons			
95636	1,2,4-Trichlorobenzene *	Lagoons			
96128	1,2-Dibromo-3-chloropropane	Animal Movement	X		X
96184	1,2,3-Trichloropropane *	Animal Movement			
98828	Cumene *	Animal Movement			
100414	Ethylbenzene	Animal Movement			X
100425	Styrene	Animal Movement, Lagoons		X	X
100447	Benzyl chloride	Animal Movement	X	X	X
106467	1,4-Dichlorobenzene	Animal Movement, Lagoons	X		X
106934	1,2-Dibromoethane (EDB)	Animal Movement	X		X
106990	1,3-Butadiene	Lagoons	X		X
107062	1,2-Dichloroethane (EDC)	Animal Movement	X		X
107131	Acrylonitrile	Animal Movement	X		X
108054	Vinyl acetate	Animal Movement, Lagoons			X
108101	Methyl Isobutyl Ketone *	Animal Movement, Lagoons			
108883	Toluene	Animal Movement, Lagoons		X	X

CAS	Pollutant	Source	Cancer	Non-Cancer	
				Acute	Chronic
108907	Chlorobenzene	Animal Movement			X
110543	Hexane	Animal Movement			X
110827	Cyclohexane *	Animal Movement, Lagoons			
115071	Propylene	Lagoons			X
120821	1,2,4-Trichlorobenzene *	Animal Movement			
123728	Butyraldehyde *	Animal Movement			
123911	1,4 Dioxane	Animal Movement	X	X	X
127184	Tetrachloroethene	Animal Movement	X	X	X
541731	1,3-Dichlorobenzene *	Animal Movement, Lagoons			
764410	t-1,4-Dichloro-2-butene *	Animal Movement			
1330207	Xylene Isomers	Animal Movement, Lagoons		X	X
4170303	Crotonaldehyde *	Animal Movement			
7429905	Aluminum *	Animal Movement			
7439921	Lead	Animal Movement	X		
7439965	Manganese	Animal Movement			X
7439976	Mercury	Animal Movement		X	X
7440020	Nickel	Animal Movement	X	X	X
7440360	Antimony *	Animal Movement			
7440382	Arsenic	Animal Movement	X	X	X
7440393	Barium *	Animal Movement			
7440439	Cadmium	Animal Movement	X		X
7440473	Chromium *	Animal Movement			
7440508	Copper	Animal Movement		X	X
7440622	Vanadium	Animal Movement	X		
7440666	Zinc	Animal Movement			X
7664417	Ammonia	Animal Movement, Lagoons Wastewater Application		X	X
7723140	Phosphorus *	Animal Movement			
7726956	Bromine	Animal Movement			X
7782492	Selenium	Animal Movement			X
7782505	Chlorine	Animal Movement		X	X
18540299	Hexavalent Chromium	Animal Movement	X	X	X

\*Health risk assessment values have not yet been assigned for this chemical.

## 3.2. EXPOSURE ASSESSMENT

### 3.2.1. Source Emissions and Characterization

Peak one-hour emission rates and annual-averaged emission rates were calculated for all pollutants for each modeled source. Emissions attribute to animal movement and manure management were estimated by the SJVAPCD using PM<sub>10</sub> emission factors and HAPs speciation spreadsheets. The incremental increase in emissions attributable to cattle were calculated by comparing the emissions from each source based on the number and type of cattle pre and post project. The project applicant provided pre and post cattle numbers. Emissions for tractors were calculated using the EPA's *Nonroad Compression-Ignition Engines - Exhaust Emission Standards* for

the appropriate engine horsepower (HP) and year and load factors for the appropriate engine horsepower from California Emissions Estimator Model (CalEEMod) Appendix D, Tables 3.3 and 3.4. Diesel truck running and idling emissions are based on EMFAC2021 emission factors specific to Merced County for vehicle category "T7 Single Other Class 8." Diesel trucks were assumed to have 15 minutes of idling per visit. The new lagoon's H<sub>2</sub>S emissions were assumed to be 10% of the NH<sub>3</sub> lagoon emissions. This assumption was taken from the SJVAPCD's dairy calculator.

The actual total construction activities were estimated to be four months. Therefore, a half year exposure HRA was conducted and added to the operational HRA results. Construction emissions will be restricted to occur between the hours of 7am and 5pm.

The calculation worksheets and CalEEMod output files for the emissions are provided in **Appendix A**. Hourly and annual emissions for each source are also provided in the HARP output files, electronic copies of which are provided in **Appendix B**.

### 3.2.2. Dispersion Modeling

A version of EPA's AMS/EPA Regulatory Model - AERMOD (recompiled for the Lakes ISC-AERMOD View interface) was used to predict the dispersion of emissions from the proposed dairy expansion. The construction activities, animal housing areas, milk barn, wastewater ponds, solid manure storage and land application areas were modeled as area sources. Unit emission rates for the area sources of 1 g/sec divided by the area of the source were input into AERMOD. The travel route for the feed and bedding delivery tractors, solids removal trucks, milk tankers and commodity trucks were modeled as line sources, which represents a series of volume sources, with a unit emission rate of 1 g/sec. The feed loading tractor, manure loading tractor, manure scraping tractor, solids removal truck idling, milk tanker idling, and commodity truck idling were modeled as point sources, with a unit emission rate of 1 g/sec. Modeled sources are identified in **Table 3-1**.

All of the AERMOD regulatory default parameters were employed. Rural dispersion parameters were used because the facility and surrounding land are considered "rural" under the Auer land use classification method. The AERMOD files are provided in electronic format on a CD in **Appendix B**.

#### 3.2.2.1. Meteorological Data

The SJVAPCD provided meteorological data for Merced County, California to be used for projects within Merced County. SJVAPCD-approved, AERMET processed meteorological datasets for calendar years 2013 through 2017<sup>2</sup> was input into AERMOD. This was the most recent available dataset available at the time the modeling runs were conducted.

#### 3.2.2.2. Receptors

Existing land uses in the area where the proposed dairy will be located are predominantly agriculture. There are scattered rural residences in the general area of the project; most of which are associated with local agricultural operations. A total of 156 off-site receptors of residences and workers and 2 on-site receptors were assessed during the preparation of this HRA. There are currently four on-site residences, however, currently only two have children residing in the house where the owner does not live. Coordinates for the point of maximum impact (PMI) receptors are provided in **Table 2-3**.

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<sup>2</sup> Provided via website, San Joaquin Valley Air Pollution Control District (SJVAPCD), [ftp://12.219.204.27/public/Modeling/Meteorological\\_Data/AERMET\\_v16216/Modesto\\_23258/](ftp://12.219.204.27/public/Modeling/Meteorological_Data/AERMET_v16216/Modesto_23258/)

### 3.2.3. HARP Post-Processing

The files generated in AERMOD were uploaded to the Air Dispersion Modeling and Risk Assessment Tool (ADMRT) program in the Hotspots Analysis and Reporting Program Version 2 (HARP 2) (CARB 2015). ADMRT post-processing was used to assess the potential for excess cancer risk and chronic non-cancer effects using the most recent health effects data from the California EPA Office of Environmental Health Hazard Assessment (OEHHA). ADMRT site parameters were set for mandatory minimum exposure pathways for carcinogenic risk. The deposition rate was set to 0.02 m/s. Risk reports were generated for carcinogenic risk, non-carcinogenic chronic risk and non-carcinogenic acute risk. Site parameters are included in the HARP output files.

## 3.3. RISK CHARACTERIZATION

For permitting and CEQA purposes, SJVAPCD has set the level of significance for carcinogenic risk at 20 in one million, which is understood as the possibility of causing twenty additional cancer cases in a population of one million people (SJVAPCD 2015b). The level of significance for chronic and acute non-cancer risk is a hazard index of one (SJVAPCD 2015c).

HARP 2 post-processing was used to assess the potential for the following: excess cancer risk, acute non-cancer effects, and chronic non-cancer effects. Total cancer risk was predicted for inhalation and non-inhalation pathways at each receptor. The hazard index is computed by endpoint as the sum of the hazard indices for all relevant pollutants, the highest of which is designated as the total hazard index.

The carcinogenic risk predicted at the potentially impacted receptors does not exceed the significance level of twenty in one million ( $20 \times 10^{-6}$ ). The health hazard index (HI) for chronic and acute non-cancer risk is below the significance level of 1.0 at all modeled receptors. The excess cancer risk, acute non-cancer HI, and chronic non-cancer HI for the maximum modeled receptor are provided in **Table 3-3**. The HARP2 output files for cancer, acute, and chronic risks are provided in electronic format on **Appendix B**.

As shown below in **Table 3-3**, the maximum predicted cancer risk is  $13.5E-06$ . Cancer risks are primarily attributable to emissions of naphthalene through the inhalation pathway. Carcinogenic risks are tabulated by pollutant in **Table 3-4**.

The maximum predicted acute non-cancer hazard index is 0.710. Acute risks are primarily attributable to emissions of ammonia, which affects the respiratory system and eyes. Acute risks are tabulated by pollutant in **Table 3-5**.

The maximum predicted chronic non-cancer hazard index is 0.252. Chronic risks, tabulated by pollutant in **Table 3-6**, are primarily attributable to emissions of ammonia which affect the respiratory system.

**Table 3-3. Risk Predicted By HARP**

	<b>Maximum Lifetime Excess Cancer Risk</b>	<b>Maximum Non-Cancer Chronic Hazard Index</b>	<b>Maximum Non-Cancer Acute Hazard Index</b>
<b>Construction</b>	3.77E-07	9.28E-04	0.00E+00
<b>Operational</b>	1.32E-05	2.51E-01	7.10E-01
<b>Total</b>	1.35E-05	2.52E-01	7.10E-01
<b>Receptor #, Name</b>	1, On-Site Residence	1, On-Site Residence	1, On-Site Residence
<b>UTM Easting (m)</b>	720719.29	720719.29	720719.29
<b>UTM Northing (m)</b>	4113504.44	4113504.44	4113504.44

**Table 3-4. Risk by Pollutant – Maximum Cancer Risk at Receptor #1**

CHEM	INHAL	SOIL	DERM	MOTHER	WATER	FISH	CROP	BEEF	DAIRY	PIG	CHICK	EGG	TOTAL
Naphthalene	5.27E-06	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	5.27E-06
Acrylonitrile	1.56E-06	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.56E-06
TetraClEthane	1.38E-06	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.38E-06
Benzyl Chloride	1.08E-06	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.08E-06
DieselExhPM	8.28E-07	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.28E-07
Perc	8.11E-07	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.11E-07
EDB	7.49E-07	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.49E-07
Arsenic	9.30E-08	5.02E-07	2.14E-08	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.16E-07
p-DiClBenzene	4.24E-07	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.24E-07
Cr(VI)	1.73E-07	7.32E-09	1.04E-10	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.80E-07
1,4-Dioxane	1.50E-07	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.50E-07
DBCP	1.34E-07	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.34E-07
1,1,2TriClEthan	9.56E-08	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	9.56E-08
Benzene	7.00E-08	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.00E-08
EDC	6.02E-08	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	6.02E-08
Acetaldehyde	4.07E-08	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.07E-08
Formaldehyde	3.74E-08	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.74E-08
Ethyl Benzene	1.86E-08	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.86E-08
TCE	1.57E-08	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.57E-08
Lead	7.12E-10	6.22E-09	1.33E-10	6.82E-11	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.14E-09
CCl4	3.42E-09	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.42E-09
Nickel	3.08E-09	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.08E-09
Chloroform	9.67E-10	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	9.67E-10
SUM	1.30E-05	5.16E-07	2.16E-08	6.82E-11	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.35E-05

**Table 3-5. Risk by Pollutant – Maximum Acute Noncancer Risk at Receptor #1**

CHEM	CV	CNS	IMMUN	KIDNEY	GILV	REPRO /DEVEL	RESP	SKIN	EYE	BONE /TEETH	ENDO	BLOOD	ODOR	GENERAL	MAX
NH3	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.03E-01	0.00E+0	7.03E-01	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	7.03E-01
H2S	0.00E+0	1.83E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.83E-01
Arsenic	3.32E-03	3.32E-03	0.00E+00	0.00E+00	0.00E+00	3.32E-03	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	3.32E-03
SULFATES	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.52E-03	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.52E-03
Formaldehyde	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+0	0.00E+0	2.29E-03	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.29E-03
Benzene	0.00E+0	0.00E+00	1.89E-03	0.00E+00	0.00E+00	1.89E-03	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	1.89E-03	0.00E+00	0.00E+00	1.89E-03
Benzyl Chloride	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.83E-03	0.00E+0	1.83E-03	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.83E-03
Nickel	0.00E+0	0.00E+00	1.45E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.45E-03
Acetaldehyde	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.42E-04	0.00E+0	6.42E-04	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	6.42E-04
MEK	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.65E-04	0.00E+0	5.65E-04	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	5.65E-04
Isopropyl Alcoh	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.80E-04	0.00E+0	2.80E-04	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.80E-04
Mercury	0.00E+0	2.76E-04	0.00E+00	0.00E+00	0.00E+00	2.76E-04	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.76E-04
Toluene	0.00E+0	1.39E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.39E-04	0.00E+0	1.39E-04	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.39E-04
Perc	0.00E+0	1.36E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.36E-04	0.00E+0	1.36E-04	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.36E-04
1,4-Dioxane	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-04	0.00E+0	1.31E-04	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.31E-04
CS2	0.00E+0	1.02E-04	0.00E+00	0.00E+00	0.00E+00	1.02E-04	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.02E-04
Copper	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.47E-05	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	5.47E-05
Xylenes	0.00E+0	5.18E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.18E-05	0.00E+0	5.18E-05	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	5.18E-05
Vanadium	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.15E-05	0.00E+0	4.15E-05	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	4.15E-05
Chloroform	0.00E+0	3.15E-05	0.00E+00	0.00E+00	0.00E+00	3.15E-05	3.15E-05	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	3.15E-05
Styrene	0.00E+0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.90E-05	1.90E-05	0.00E+0	1.90E-05	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.90E-05
CCl4	0.00E+0	1.12E-06	0.00E+00	0.00E+00	1.12E-06	1.12E-06	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.12E-06
SUM	3.32E-03	1.87E-01	3.34E-03	0.00E+00	1.12E-06	5.64E-03	7.10E-01	0.00E+0	7.09E-01	0.00E+00	0.00E+0	1.89E-03	0.00E+00	0.00E+00	7.10E-01



Table 3-6. Risk by Pollutant – Maximum Chronic Noncancer Risk at Receptor #1

CHEM	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/ DEVEL	RESP	SKIN	EYE	BONE/ TEETH	ENDO	BLOOD	ODOR	GENERAL	MAX
NH3	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	1.96E-01	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.96E-01
Arsenic	3.12E-02	3.12E-02	0.00E+0	0.00E+0	0.00E+00	3.12E-02	3.12E-02	3.12E-02	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	3.12E-02
H2S	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	1.54E-02	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.54E-02
Naphthalene	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	6.69E-03	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	6.69E-03
Manganese	0.00E+00	5.60E-03	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	5.60E-03
EDB	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	5.14E-03	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	5.14E-03
Perc	0.00E+00	0.00E+0	0.00E+0	1.51E-03	1.51E-03	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.51E-03
Acrylonitrile	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	4.27E-04	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	4.27E-04
Nickel	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	3.96E-06	3.32E-04	0.00E+00	0.00E+0	0.00E+0	0.00E+0	3.32E-04	0.00E+00	0.00E+00	3.32E-04
Benzene	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	3.20E-04	0.00E+00	0.00E+00	3.20E-04
Formaldehyde	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	2.71E-04	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.71E-04
Mercury	0.00E+00	2.50E-04	0.00E+0	2.50E-04	0.00E+00	2.50E-04	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.50E-04
DieselExhPM	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	1.04E-03	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.04E-03
Vinyl Acetate	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	7.42E-05	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	7.42E-05
Acetaldehyde	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	3.98E-05	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	3.98E-05
Toluene	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+00	2.74E-05	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.74E-05
Xylenes	0.00E+00	2.67E-05	0.00E+0	0.00E+0	0.00E+00	0.00E+0	2.67E-05	0.00E+00	2.67E-05	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.67E-05
p-DiClBenzene	0.00E+00	1.81E-05	0.00E+0	1.81E-05	1.81E-05	0.00E+0	1.81E-05	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.81E-05
CS2	0.00E+00	1.52E-05	0.00E+0	0.00E+0	0.00E+00	1.52E-05	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.52E-05
Styrene	0.00E+00	7.96E-06	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	7.96E-06
TCE	0.00E+00	5.12E-06	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+00	5.12E-06	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	5.12E-06
Chlorobenzn	0.00E+00	0.00E+0	0.00E+0	3.75E-06	3.75E-06	3.75E-06	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	3.75E-06
EDC	0.00E+00	0.00E+0	0.00E+0	0.00E+0	2.87E-06	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.87E-06
1,4-Dioxane	2.54E-06	0.00E+0	0.00E+0	2.54E-06	2.54E-06	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.54E-06
Cr(VI)	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+0	2.32E-06	0.00E+00	0.00E+0	0.00E+0	0.00E+0	2.18E-07	0.00E+00	0.00E+00	2.32E-06
Isopropyl Alcoh	0.00E+00	0.00E+0	0.00E+0	2.04E-06	0.00E+00	2.04E-06	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.04E-06
Ethyl Benzene	0.00E+00	0.00E+0	0.00E+0	1.47E-06	1.47E-06	1.47E-06	0.00E+0	0.00E+00	0.00E+0	0.00E+0	1.47E-06	0.00E+00	0.00E+00	0.00E+00	1.47E-06
Selenium	1.30E-06	1.30E-06	0.00E+0	0.00E+0	1.30E-06	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.30E-06
Hexane	0.00E+00	1.04E-06	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	1.04E-06
CCl4	0.00E+00	7.81E-07	0.00E+0	0.00E+0	7.81E-07	7.81E-07	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	7.81E-07
Chloroform	0.00E+00	0.00E+0	0.00E+0	2.32E-07	2.32E-07	2.32E-07	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	2.32E-07
Ethyl Chloride	0.00E+00	0.00E+0	0.00E+0	0.00E+0	4.66E-08	4.66E-08	0.00E+0	0.00E+00	0.00E+0	0.00E+0	0.00E+0	0.00E+00	0.00E+00	0.00E+00	4.66E-08
SUM	3.12E-02	3.71E-02	0.00E+0	1.79E-03	1.54E-03	3.66E-02	2.52E-01	3.12E-02	5.92E-05	0.00E+0	1.47E-06	6.52E-04	0.00E+00	0.00E+00	2.52E-01

## 4. CONCLUSIONS

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In accordance with the *Guide for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2015a) and San Joaquin Valley Air Pollution Control District policies (SJVAPCD 2015b; SJVAPCD 2016c), the unmitigated potential health risk attributable to the Azevedo Dairy #4 expansion for chronic and acute carcinogenic and non- carcinogenic risk is determined to be less than significant based on the following conclusion:

- Potential chronic carcinogenic risk from the proposed facility is *below* the significance level of twenty in one million at each of the modeled receptors;
- The hazard index for the potential chronic non-cancer risk from the proposed facility is *below* the significance level of 1.0 at each of the modeled receptors.
- The hazard index for the potential acute non-cancer risk from the proposed facility is *below* the significance level of 1.0 at each of the modeled receptors.

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## APPENDIX A: EMISSION ESTIMATION WORKSHEETS

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**Table 1. Truck Travel: Diesel Particulate Matter Increased Emissions**

Type of Vehicles	Source	Round Trip Distance (mi)	Emission Factor (g/mi)	Increase in Trucks/Year	Emissions (lb/yr)	Emissions (lb/day)
Milk Tankers	MTT	0.02	0.14	730	4.70E-03	1.29E-05
Commodity Delivery	CTT	0.05	0.14	1460	2.14E-02	5.87E-05
Manure Transport	SMTT	0.11	0.14	300	1.00E-02	1.43E-03

Note 1: Running emission factors for vehicle category "T7 Single Other Class 8" were obtained from the EMFAC2021 Web Database for Merced County (2021) with an Aggregate Fleet Mix Traveling 10 MPH.

Note 2: Increases in trucks/yr is from the Initial Study, page 17

**Table 2. Truck Idling: Diesel Particulate Matter Increased Emissions**

Type of Vehicles	Source	Emission Factor (g/hr-vehicle)	Minutes Idling/Truck	Increase in Trucks/Year	Emissions (lb/yr)	Emissions (lb/day)
Milk Tankers	MTI	0.003	15	730	1.27E-03	3.48E-06
Commodity Delivery	CTI	0.003	15	1460	2.54E-03	6.96E-06
Manure Transport	SMTI	0.003	15	300	5.22E-04	7.46E-05

Note 1: Running emission factors for vehicle category "T7 Single Other Class 8" were obtained from the EMFAC2021 Web Database for Merced County (2021) with an Aggregate Fleet Mix Idling.

Note 2: Increases in trucks/yr is from the Initial Study, page 17

**Table 3. Tractors: Diesel Particulate Matter Increased Emissions**

	Source (# Volume Sources)	HP	Load Factor	Hours/Year	Emission Factor (g/hp-hr)	Emissions (lb/yr)	Emissions (lb/day)
Feed Loading	FLT	183	0.37	365	1.49E-02	8.13E-01	2.23E-03
Bedding Delivery	FBTD1-2	140	0.37	360.00	1.49E-02	6.13E-01	1.18E-02
Manure Scraping	MST	140	0.37	60	1.49E-02	1.02E-01	7.30E-03
Manure Loading	MLT	173	0.37	60.00	1.49E-02	1.26E-01	1.26E-02
Feed Delivery	FBTD1-2	455	0.37	365	1.49E-02	2.02E+00	5.54E-03

Note1 : Emissions based on EPA's *Nonroad Compression-Ignition* Engines - Exhaust Emission Standards for the appropriate year and HP

<https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100OA05.pdf>

Note 2: Increase in hours/day was provided by the project applicant

### Pre-Project Facility Information

- Does this facility house Holstein or Jersey cows?   
Most facilities house Holstein cows unless explicitly stated on the PTO or application.
- Does the facility have an anaerobic treatment lagoon?
- Does the facility land apply liquid manure?   
Answering "yes" assumes worst case.
- Does the facility land apply solid manure?   
Answering "yes" assumes worst case.
- Is any scraped manure sent to a lagoon/storage pond?   
Answering "yes" assumes worst case.

Pre-Project Herd Size							
Herd	Flushed Freestalls	Scraped Freestalls	Flushed Corrals	Scraped Corrals	Total # of Animals		
Milk Cows	370				370		
Dry Cows	61				61		
Support Stock (Heifers, Calves, and Bulls)	300			999	1,299		
Large Heifers					0		
Medium Heifers					0		
Small Heifers					0		
Bulls					0		
	Calf Hutches				Calf Corrals		Total # of Calves
	Aboveground Flushed	Aboveground Scraped	On-Ground Flushed	On-Ground Scraped	Flushed	Scraped	
Calves							0

Total Herd Summary	
Total Milk Cows	370
Total Mature Cows	431
Support Stock (Heifers, Calves, and Bulls)	1,299
Total Calves	0
Total Dairy Head	1,730

Pre-Project Silage Information			
Feed Type	Max # Open Piles	Max Height (ft)	Max Width (ft)
Corn			
Alfalfa			
Wheat			

### Post-Project Facility Information

- Does this facility house Holstein or Jersey cows?   
Most facilities house Holstein cows unless explicitly stated on the PTO or application.
- Does the facility have an anaerobic treatment lagoon?
- Does the facility land apply liquid manure?   
Answering "yes" assumes worst case.
- Does the facility land apply solid manure?   
Answering "yes" assumes worst case.
- Is any scraped manure sent to a lagoon/storage pond?
- Does this project result in an increase or relocation of uncovered surface area for any lagoon/storage pond?

NOTE: An increase in total lagoon/storage pond surface area may result in an increase in H2S emissions. The District's Technical Services Division may need to conduct H2S modeling.

Post-Project Herd Size							
Herd	Flushed Freestalls	Scraped Freestalls	Flushed Corrals	Scraped Corrals	Total # of Animals		
Milk Cows	2,500				2,500		
Dry Cows	500				500		
Support Stock (Heifers, Calves, and Bulls)	667			333	1,000		
Large Heifers					0		
Medium Heifers					0		
Small Heifers					0		
Bulls					0		
	Calf Hutches				Calf Corrals		Total # of Calves
	Aboveground Flushed	Aboveground Scraped	On-Ground Flushed	On-Ground Scraped	Flushed	Scraped	
Calves							0

Total Herd Summary	
Total Milk Cows	2,500
Total Mature Cows	3,000
Support Stock (Heifers, Calves, and Bulls)	1,000
Total Calves	0
Total Dairy Head	4,000

Post-Project Silage Information			
Feed Type	Max # Open Piles	Max Height (ft)	Max Width (ft)
Corn			
Alfalfa			
Wheat			



### Post-Project PM10 Mitigation Measures

Post-Project PM10 Mitigation Measures														
Housing Name(s) or #(s)	Type of Housing	Type of cow	Total # of cows in Each Housing Structure(s)	Maximum Design Capacity of Each Structure	# of Combined Housing Structures in row	Shaded Corrals	Downwind Shelterbelts	Upwind Shelterbelts	No exercise pens, non-manure bedding	No exercise pens, manure bedding	Fibrous layer	Bi-weekly scraping Corrals/Pens	Sprinkling Corrals/Pens	Feed Young Stock Near Dusk
1	Corral 1-4	open corral	support stock	333	333	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Barn 1	saudi style barn	milk cows	700	700	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Barn 2	saudi style barn	milk cows	1,000	1,000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Barn 3	saudi style barn	dry cows	300	300	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Post-Project PM10 Mitigation Measures for New Housing Units at an Expanding Dairy														
Housing Name(s) or #(s)	Type of Housing	Type of cow	Total # of cows in Each Housing Structure(s)	Maximum Design Capacity of Each Structure	# of Combined Housing Structures in row	Shaded Corrals	Downwind Shelterbelts	Upwind Shelterbelts	No exercise pens, non-manure bedding	No exercise pens, manure bedding	Fibrous layer	Bi-weekly scraping Corrals/Pens	Sprinkling Corrals/Pens	Feed Young Stock Near Dusk
1	Barn 4	saudi style barn	support stock	334	334	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Barn 5	saudi style barn	milk cows	800	800	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	Barn 5	saudi style barn	dry cows	200	200	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4	Barn6	saudi style barn	support stock	333	333	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Post-Project Total # of Cows</b>			4,000	(The post-project total includes			dairy cows already on-site and			new cows from the expansion.)				

Post-Project PM10 Control Efficiencies and Emission Factors															
Housing Name(s) or #(s)	Type of Housing	Type of cow	Total # of cows in Each Housing Structure(s)	Maximum Design Capacity of Each Structure	Uncontrolled EF (lb/hd-yr)	Shaded Corrals	Downwind Shelterbelts	Upwind Shelterbelts	No exercise pens, non-manure bedding	No exercise pens, manure bedding	Fibrous layer	Bi-weekly scraping Corrals/Pens	Sprinkling Corrals/Pens	Feed Young Stock Near Dusk	Controlled EF (lb/hd-yr)
1	Corral 1-4	open corral	support stock	333	333	10.550		12.5%	10%				15%		7.06
2	Barn 1	saudi style barn	milk cows	700	700	1.370		12.5%	10%				15%		0.92
3	Barn 2	saudi style barn	milk cows	1,000	1,000	1.370		12.5%	10%				15%		0.92
4	Barn 3	saudi style barn	dry cows	300	300	1.370		12.5%	10%				15%		0.92
Post-Project PM10 Control Efficiencies and Emission Factors for New Housing Emissions Units															
Housing Name(s) or #(s)	Type of Housing	Type of cow	Total # of cows in Each Housing Structure(s)	Maximum Design Capacity of Each Structure	Uncontrolled EF (lb/hd-yr)	Shaded Corrals	Downwind Shelterbelts	Upwind Shelterbelts	No exercise pens, non-manure bedding	No exercise pens, manure bedding	Fibrous layer	Bi-weekly scraping Corrals/Pens	Sprinkling Corrals/Pens	Feed Young Stock Near Dusk	Controlled EF (lb/hd-yr)
1	Barn 4	saudi style barn	support stock	334	334	1.370		12.5%	10%				15%		0.92
2	Barn 5	saudi style barn	milk cows	800	800	1.370		12.5%	10%				15%		0.92
3	Barn 5	saudi style barn	dry cows	200	200	1.370		12.5%	10%				15%		0.92
4	Barn6	saudi style barn	support stock	333	333	1.370		12.5%	10%				15%		0.92



### Pre-Project Potential to Emit - Cow Housing

Pre-Project Potential to Emit - Cow Housing												
Housing Name(s) or #s	Type of Cow	# of Cows	Controlled VOC EF (lb/hd-yr)	Controlled NH3 EF (lb/hd-yr)	Controlled PM10 EF (lb/hd-yr)	VOC (lb/day)	VOC (lb/yr)	NH3 (lb/day)	NH3 (lb/yr)	PM10 (lb/day)	PM10 (lb/yr)	
1	Corral 1-4	support stock	999	6.13	10.08	10.55	16.8	6,124	27.6	10,070	28.9	10,539
2	Barn 1	milk cows	370	14.2	38.38	1.37	14.4	5,254	38.9	14,199	1.4	507
3	Barn 2	support stock	240	6.13	10.08	1.37	4.0	1,471	6.6	2,419	0.9	329
4	Barn 2	dry cows	61	7.88	19.44	1.37	1.3	481	3.2	1,186	0.2	84
5	Barn 3	support stock	60	6.13	10.08	1.37	1.0	368	1.7	605	0.2	82
<b>Pre-Project Total # of Cows</b>		<b>1,730</b>				<b>37.5</b>	<b>13,698</b>	<b>78.0</b>	<b>28,479</b>	<b>31.6</b>	<b>11,541</b>	

\*Multiple emissions units (freestalls, corrals, calf hutch areas, etc.) are combined in these rows.

Pre-Project Totals						
Total # of Cows	VOC (lb/day)	VOC (lb/yr)	NH3 (lb/day)	NH3 (lb/yr)	PM10 (lb/day)	PM10 (lb/yr)
1,730	37.5	13,698	78.0	28,479	31.6	11,541

**Calculations:**

Annual PE 1 for each pollutant (lb/yr) = Controlled EF (lb/hd-yr) x # of cows (hd)  
 Daily PE1 for each pollutant (lb/day) = [Controlled EF (lb/hd-yr) x # of cows (hd)] ÷ 365 (day/yr)

### Post-Project Potential to Emit - Cow Housing

Post-Project Potential to Emit - Cow Housing												
Housing Name(s) or #s	Type of Cow	# of Cows	Controlled VOC EF (lb/hd-yr)	Controlled NH3 EF (lb/hd-yr)	Controlled PM10 EF (lb/hd-yr)	VOC (lb/day)	VOC (lb/yr)	NH3 (lb/day)	NH3 (lb/yr)	PM10 (lb/day)	PM10 (lb/yr)	
1	Corral 1-4	support stock	333	4.38	10.08	7.06	4.0	1,459	9.2	3,357	6.4	2,352
2	Barn 1	milk cows	700	10.13	38.38	0.92	19.4	7,091	73.6	26,863	1.8	642
3	Barn 2	milk cows	1,000	10.13	38.38	0.92	27.8	10,130	105.1	38,376	2.5	917
4	Barn 3	dry cows	300	5.71	19.44	0.92	4.7	1,713	16.0	5,832	0.8	275
<b>Post-Project # of Cows (non-expansion)</b>		<b>2,333</b>				<b>55.9</b>	<b>20,393</b>	<b>203.9</b>	<b>74,428</b>	<b>11.5</b>	<b>4,186</b>	

\*Multiple emissions units (freestalls, corrals, calf hutch areas, etc.) are combined in these rows.

Post-Project Potential to Emit - Cow Housing: New Housing Units at an Expanding Dairy												
Housing Name(s) or #s	Type of Cow	# of Cows	Controlled VOC EF (lb/hd-yr)	Controlled NH3 EF (lb/hd-yr)	Controlled PM10 EF (lb/hd-yr)	VOC (lb/day)	VOC (lb/yr)	NH3 (lb/day)	NH3 (lb/yr)	PM10 (lb/day)	PM10 (lb/yr)	
1	Barn 4	support stock	334	4.38	10.08	0.92	4.0	1,463	9.2	3,367	0.8	306
2	Barn 5	milk cows	800	10.13	38.38	0.92	22.2	8,104	84.1	30,701	2.0	734
3	Barn 5	dry cows	200	5.71	19.44	0.92	3.1	1,142	10.7	3,888	0.5	183
4	Barn6	support stock	333	4.38	10.08	0.92	4.0	1,459	9.2	3,357	0.8	305
<b>Total # of Cows From Expansion</b>		<b>1,667</b>				<b>33.3</b>	<b>12,168</b>	<b>113.2</b>	<b>41,313</b>	<b>4.1</b>	<b>1,528</b>	

\*Multiple emissions units (freestalls, corrals, calf hutch areas, etc.) are combined in these rows.

Post-Project Totals						
Total # of Cows	VOC (lb/day)	VOC (lb/yr)	NH3 (lb/day)	NH3 (lb/yr)	PM10 (lb/day)	PM10 (lb/yr)
4,000	89.2	32,561	317.1	115,741	15.6	5,714

**Calculations:**

Annual PE 2 for each pollutant (lb/yr) = Controlled EF (lb/hd-yr) x # of cows (hd)  
 Daily PE2 for each pollutant (lb/day) = [Controlled EF (lb/hd-yr) x # of cows (hd)] ÷ 365 (day/yr)

## Increase in Emissions

SSIPE (lb/yr)							
	NOx	SOx	PM10	CO	VOC	NH3	H2S
Milking Parlor	0	0	0	0	845	291	0
Cow Housing	0	0	-5,827	0	18,863	87,262	0
Liquid Manure	0	0	0	0	4,730	26,921	N/A
Solid Manure	0	0	0	0	1,034	6,431	0
Feed Handling	0	0	0	0	22,550	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>-5,827</b>	<b>0</b>	<b>48,021</b>	<b>120,906</b>	<b>N/A</b>

Total Daily Change in Emissions (lb/day)							
	NOx	SOx	PM10	CO	VOC	NH3	H2S
Milking Parlor	0.0	0.0	0.0	0.0	2.3	0.8	0.0
Cow Housing	0.0	0.0	-16.0	0.0	51.7	239.1	0.0
Liquid Manure	0.0	0.0	0.0	0.0	12.9	73.8	N/A
Solid Manure	0.0	0.0	0.0	0.0	2.8	17.7	0.0
Feed Handling	0.0	0.0	0.0	0.0	61.8	0.0	0.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>-16.0</b>	<b>0.0</b>	<b>131.5</b>	<b>331.4</b>	<b>N/A</b>

Total Annual Change in Non-Fugitive Emissions (Major Source Emissions) (lb/yr)							
	NOx	SOx	PM10	CO	VOC	NH3	H2S
Milking Parlor	0	0	0	0	0	0	0
Cow Housing	0	0	0	0	0	0	0
Liquid Manure	0	0	0	0	2,274	0	N/A
Solid Manure	0	0	0	0	0	0	0
Feed Handling	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,274</b>	<b>0</b>	<b>N/A</b>

**Name**

**Cow Housing Summary**

**Applicability**

Use this spreadsheet to enter data from the Engineer's Dairy Calculator. Entries here will be linked to other worksheets. After completion, proceed to RMR worksheet for further entries.

\*Notes:

*Author or updater*

Matthew Cegielski

*Last Update*

September 24, 2018

**Facility:  
ID#:**

Azevedo Dairy #4

0

Not Set

**Project #:**

**Potential to Emit - Cow Housing**

Housing Name(s) or #(s)	Type of Cow	# of Cows	VOC (lb/hr)	VOC (lb/yr)	NH <sub>3</sub> (lb/hr)	NH <sub>3</sub> (lb/yr)	PM <sub>10</sub> (lb/hr)	PM <sub>10</sub> (lb/yr)
Corral 1-4	Support Stock	333	-0.5333	-4,665	-0.7667	-6,713	-0.9375	-8,187
Barn 1	Milk	700	0.2083	1,837	1.4458	12,664	0.0167	135
Barn 2	Milk	1000	0.9375	8,178	3.9708	34,771	0.0583	504
Barn 3	Dry	300	0.1542	1,345	0.5958	5,227	0.0250	193
Barn 4	Support Stock	334	0.1667	1,463	0.3833	3,367	0.0333	306
Barn 5	Milk/Dry	1000	1.0542	9,246	3.9500	34,589	0.1042	917
Barn 6	Support Stock	333	0.1667	1,459	0.3833	3,357	0.0333	305

Copy and paste values from the corresponding table in the Engineer Dairy Calculator's RMR Summary worksheet. Paste values only with matched destination formatting. Ensure the same names are lined up by row number. Zero and null entries will be highlighted in red after entry.

SSIFE RMR Summary							
	PM10 lb/hr	PM10 lb/yr	VOC lb/hr	VOC lb/yr	NH3 lb/hr	NH3 lb/yr	H2S lb/yr
Milking Parlor	-	-	0.10	845	0.03	291	-
Cow Housing	-0.67	-5,827	2.15	18,863	9.96	87,262	-
Liquid Manure	-	-	0.54	4,730	3.07	26,921	-
Solid Manure	-	-	0.12	1,034	0.73	6,431	-
Feed Handling	-	-	2.57	22,550	-	-	-
Lagoon/Storage Pond	-	-	0.26	2,300	1.47	12,885	1,288
Land Application (Liquid)	-	-	0.28	2,446	1.60	14,016	-
Land Application (Solid)	-	-	0.07	584	0.39	3,431	-
Solid Manure Storage	-	-	0.05	402	0.35	3,066	-

SSIFE Total Herd Summary	
Change in Milk Cows	2,130
Change in Dairy Head	2,270
Change in Dairy Head (Flushed)	2,270

PM <sub>10</sub> based Agricultural Emissions from Operations generating Dust from Livestock Soil																
Use this spreadsheet when the emissions are from a Feedlot Soil sources or Cow Housing and the PM <sub>10</sub> rates are known (e.g. Dairy operations). Ammonia and PM <sub>10</sub> Emission rates linked to Cow Housing worksheet. No entries required on this worksheet. Zero and null entries will be highlighted in red after entry.																
Author or updater		Matthew Cegielski														
Last Update		September 24, 2018														
Facility:		Azevedo Dairy #4														
ID#:		0														
Project #:		0														
Formula																
Emission are calculated by the multiplication of the PM <sub>10</sub> Rates and the Emission Factors.																
		Corral 1-4		Barn 1		Barn 2		Barn 3		Barn 4		Barn 5		Barn 6		
		lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	
PM <sub>10</sub> Emissions Rates		0.00E+00	0.00E+00	1.67E-02	1.35E+02	5.83E-02	5.04E+02	2.50E-02	1.93E+02	3.33E-02	3.06E+02	1.04E-01	9.17E+02	3.33E-02	3.05E+02	
Substances	CAS#	Dust* lb/lb PM <sub>10</sub>	LB/HR	LB/YR	LB/HR	LB/YR	LB/HR	LB/YR	LB/HR	LB/YR	LB/HR	LB/YR	LB/HR	LB/YR	LB/HR	LB/YR
Aluminum	7429905	4.66E-02	0.00E+00	0.00E+00	7.77E-04	6.29E+00	2.72E-03	2.35E+01	1.17E-03	9.00E+00	1.55E-03	1.43E+01	4.86E-03	4.27E+01	1.55E-03	1.42E+01
Antimony	7440360	1.90E-05	0.00E+00	0.00E+00	3.17E-07	2.57E-03	1.11E-06	9.58E-03	4.75E-07	3.67E-03	6.33E-07	5.81E-03	1.98E-06	1.74E-02	6.33E-07	5.80E-03
Arsenic	7440382	1.60E-05	0.00E+00	0.00E+00	2.67E-07	2.16E-03	9.33E-07	8.06E-03	4.00E-07	3.09E-03	5.33E-07	4.90E-03	1.67E-06	1.47E-02	5.33E-07	4.88E-03
Barium	7440393	4.69E-04	0.00E+00	0.00E+00	7.82E-06	6.33E-02	2.74E-05	2.36E-01	1.17E-05	9.05E-02	1.56E-05	1.44E-01	4.89E-05	4.30E-01	1.56E-05	1.43E-01
Bromine	7726956	4.40E-05	0.00E+00	0.00E+00	7.33E-07	5.94E-03	2.57E-06	2.22E-02	1.10E-06	8.49E-03	1.47E-06	1.35E-02	4.58E-06	4.03E-02	1.47E-06	1.34E-02
Chromium	7440473	1.40E-05	0.00E+00	0.00E+00	2.33E-07	1.89E-03	8.17E-07	7.06E-03	3.50E-07	2.70E-03	4.67E-07	4.28E-03	1.46E-06	1.28E-02	4.67E-07	4.27E-03
Copper	7440508	1.32E-04	0.00E+00	0.00E+00	2.20E-06	1.78E-02	7.70E-06	6.65E-02	3.30E-06	2.55E-02	4.40E-06	4.04E-02	1.38E-05	1.21E-01	4.40E-06	4.03E-02
Hexavalent Chromium**	18540299	7.00E-07	0.00E+00	0.00E+00	1.17E-08	9.45E-05	4.08E-08	3.53E-04	1.75E-08	1.35E-04	2.33E-08	2.14E-04	7.29E-08	6.42E-04	2.33E-08	2.14E-04
Lead	7439921	3.50E-05	0.00E+00	0.00E+00	5.83E-07	4.73E-03	2.04E-06	1.76E-02	8.75E-07	6.76E-03	1.17E-06	1.07E-02	3.65E-06	3.21E-02	1.17E-06	1.07E-02
Manganese	7439965	7.59E-04	0.00E+00	0.00E+00	1.27E-05	1.02E-01	4.43E-05	3.83E-01	1.90E-05	1.46E-01	2.53E-05	2.32E-01	7.91E-05	6.96E-01	2.53E-05	2.31E-01
Mercury	7439976	4.00E-06	0.00E+00	0.00E+00	6.67E-08	5.40E-04	2.33E-07	2.02E-03	1.00E-07	7.72E-04	1.33E-07	1.22E-03	4.17E-07	3.67E-03	1.33E-07	1.22E-03
Nickel	7440020	7.00E-06	0.00E+00	0.00E+00	1.17E-07	9.45E-04	4.08E-07	3.53E-03	1.75E-07	1.35E-03	2.33E-07	2.14E-03	7.29E-07	6.42E-03	2.33E-07	2.14E-03
Phosphorus	7723140	4.01E-02	0.00E+00	0.00E+00	6.69E-04	5.42E+00	2.34E-03	2.02E+01	1.00E-03	7.75E+00	1.34E-03	1.23E+01	4.18E-03	3.68E+01	1.34E-03	1.22E+01
Selenium	7782492	1.00E-06	0.00E+00	0.00E+00	1.67E-08	1.35E-04	5.83E-08	5.04E-04	2.50E-08	1.93E-04	3.33E-08	3.06E-04	1.04E-07	9.17E-04	3.33E-08	3.05E-04
Sulfates	9960	7.28E-03	0.00E+00	0.00E+00	1.21E-04	9.83E-01	4.25E-04	3.67E+00	1.82E-04	1.41E+00	2.43E-04	2.23E+00	7.59E-04	6.68E+00	2.43E-04	2.22E+00
Vanadium	7440622	3.00E-05	0.00E+00	0.00E+00	5.00E-07	4.05E-03	1.75E-06	1.51E-02	7.50E-07	5.79E-03	1.00E-06	9.18E-03	3.13E-06	2.75E-02	1.00E-06	9.15E-03
Zinc	7440656	3.42E-04	0.00E+00	0.00E+00	5.70E-06	4.62E-02	2.00E-05	1.72E-01	8.55E-06	6.60E-02	1.14E-05	1.05E-01	3.56E-05	3.14E-01	1.14E-05	1.04E-01
Ammonia	7664417		0.00E+00	0.00E+00	1.45E+00	1.27E+04	3.97E+00	3.48E+04	5.96E-01	5.23E+03	3.83E-01	3.37E+03	3.95E+00	3.46E+04	3.83E-01	3.36E+03

**Agricultural Miscellaneous Emissions from Dairy Operations (Cow Housing)**

Use this spreadsheet to characterize the miscellaneous emissions from Dairy sources when VOC rates are known. VOC emission rates linked to Cow Housing worksheet. No entries required on this worksheet. Zero and null entries will be highlighted in red after entry.

Author or updater	Matthew Cegielski
Last Update	September 24, 2018
Facility:	Azevedo Dairy #4
ID#:	0
Project #:	0

Formula			Corral 1-4		Barn 1		Barn 2		Barn 3		Barn 4		Barn 5		Barn 6	
Emissions are calculated by the multiplication of the VOC Rates, and Emission Factors.			lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
VOC Emission Rates			0.00E+00	0.0	2.08E-01	1,837.0	9.38E-01	8,178.0	1.54E-01	1,345.0	1.67E-01	1,463.0	1.05E+00	9,246.0	1.67E-01	1,459.0
Substances	CAS#	Volatiles (lb/lb VOC)*	LB/HR	LB/YR	LB/HR	LB/YR	LB/HR	LB/YR	LB/HR	LB/YR	LB/HR	LB/YR	LB/HR	LB/YR	LB/HR	LB/YR
1,1,2,2-Tetrachloroethane	79345	8.73E-06	0.00E+00	0.00E+00	1.82E-06	1.60E-02	8.18E-06	7.14E-02	1.35E-06	1.17E-02	1.46E-06	1.28E-02	9.20E-06	8.07E-02	1.46E-06	1.27E-02
1,1,2-Trichloroethane	79005	2.26E-04	0.00E+00	0.00E+00	4.71E-05	4.15E-01	2.12E-04	1.85E+00	3.48E-05	3.04E-01	3.77E-05	3.31E-01	2.38E-04	2.09E+00	3.77E-05	3.30E-01
1,2,3-Trichloropropane	96184	2.76E-04	0.00E+00	0.00E+00	5.75E-05	5.07E-01	2.59E-04	2.26E+00	4.26E-05	3.71E-01	4.60E-05	4.04E-01	2.91E-04	2.55E+00	4.60E-05	4.03E-01
1,2,4-Trichlorobenzene	120821	7.79E-04	0.00E+00	0.00E+00	1.62E-04	1.43E+00	7.30E-04	6.37E+00	1.20E-04	1.05E+00	1.30E-04	1.14E+00	8.21E-04	7.20E+00	1.30E-04	1.14E+00
1,2-Dibromo-3-chloropropane	96128	4.94E-05	0.00E+00	0.00E+00	1.03E-05	9.07E-02	4.63E-05	4.04E-01	7.62E-06	6.64E-02	8.23E-06	7.23E-02	5.21E-05	4.57E-01	8.23E-06	7.21E-02
1,2-Dichlorobenzene	95501	5.48E-04	0.00E+00	0.00E+00	1.14E-04	1.01E+00	5.14E-04	4.48E+00	8.45E-05	7.37E-01	9.13E-05	8.02E-01	5.78E-04	5.07E+00	9.13E-05	8.00E-01
1,3-Dichlorobenzene	541731	4.90E-04	0.00E+00	0.00E+00	1.02E-04	9.00E-01	4.59E-04	4.01E+00	7.55E-05	6.59E-01	8.17E-05	7.17E-01	5.17E-04	4.53E+00	8.17E-05	7.15E-01
1,4 Dioxane	123911	1.41E-03	0.00E+00	0.00E+00	2.94E-04	2.59E+00	1.32E-03	1.15E+01	2.17E-04	1.90E+00	2.35E-04	2.06E+00	1.49E-03	1.30E+01	2.35E-04	2.06E+00
1,4-Dichlorobenzene	106467	5.19E-04	0.00E+00	0.00E+00	1.08E-04	9.53E-01	4.87E-04	4.24E+00	8.00E-05	6.98E-01	8.65E-05	7.59E-01	5.47E-04	4.80E+00	8.65E-05	7.57E-01
Acetaldehyde	75070	2.41E-03	0.00E+00	0.00E+00	5.02E-04	4.43E+00	2.26E-03	1.97E+01	3.72E-04	3.24E+00	4.02E-04	3.53E+00	2.54E-03	2.23E+01	4.02E-04	3.52E+00
Acrylonitrile	107131	2.43E-04	0.00E+00	0.00E+00	5.06E-05	4.46E-01	2.28E-04	1.99E+00	3.75E-05	3.27E-01	4.05E-05	3.56E-01	2.56E-04	2.25E+00	4.05E-05	3.55E-01
Benzene	71432	3.19E-04	0.00E+00	0.00E+00	6.65E-05	5.86E-01	2.99E-04	2.61E+00	4.92E-05	4.29E-01	5.32E-05	4.67E-01	3.36E-04	2.95E+00	5.32E-05	4.65E-01
Benzyl chloride	100447	2.89E-04	0.00E+00	0.00E+00	6.02E-05	5.31E-01	2.71E-04	2.36E+00	4.46E-05	3.89E-01	4.82E-05	4.23E-01	3.05E-04	2.67E+00	4.82E-05	4.22E-01
Butyraldehyde	123728	1.14E-04	0.00E+00	0.00E+00	2.38E-05	2.09E-01	1.07E-04	9.32E-01	1.76E-05	1.53E-01	1.90E-05	1.67E-01	1.20E-04	1.05E+00	1.90E-05	1.66E-01
Carbon Disulfide	75150	2.49E-03	0.00E+00	0.00E+00	5.19E-04	4.57E+00	2.33E-03	2.04E+01	3.84E-04	3.35E+00	4.15E-04	3.64E+00	2.62E-03	2.30E+01	4.15E-04	3.63E+00
Carbon tetrachloride	56235	5.87E-05	0.00E+00	0.00E+00	1.22E-05	1.08E-01	5.50E-05	4.80E-01	9.05E-06	7.90E-02	9.78E-06	8.59E-02	6.19E-05	5.43E-01	9.78E-06	8.56E-02
Chlorobenzene	108907	2.72E-04	0.00E+00	0.00E+00	5.67E-05	5.00E-01	2.55E-04	2.22E+00	4.19E-05	3.66E-01	4.53E-05	3.98E-01	2.87E-04	2.51E+00	4.53E-05	3.97E-01
Chloroform	67663	1.31E-04	0.00E+00	0.00E+00	2.73E-05	2.41E-01	1.23E-04	1.07E+00	2.02E-05	1.76E-01	2.18E-05	1.92E-01	1.38E-04	1.21E+00	2.18E-05	1.91E-01
Chloromethane	74873	7.93E-04	0.00E+00	0.00E+00	1.65E-04	1.46E+00	7.43E-04	6.49E+00	1.22E-04	1.07E+00	1.32E-04	1.16E+00	8.36E-04	7.33E+00	1.32E-04	1.16E+00
Crotonaldehyde	4170303	1.41E-04	0.00E+00	0.00E+00	2.94E-05	2.59E-01	1.32E-04	1.15E+00	2.17E-05	1.90E-01	2.35E-05	2.06E-01	1.49E-04	1.30E+00	2.35E-05	2.06E-01
Cyclohexane	110827	6.83E-03	0.00E+00	0.00E+00	1.42E-03	1.25E+01	6.40E-03	5.59E+01	1.05E-03	9.19E+00	1.14E-03	9.99E+00	7.20E-03	6.32E+01	1.14E-03	9.96E+00
Ethyl Chloride	75003	2.39E-04	0.00E+00	0.00E+00	4.98E-05	4.39E-01	2.24E-04	1.95E+00	3.68E-05	3.21E-01	3.98E-05	3.50E-01	2.52E-04	2.21E+00	3.98E-05	3.49E-01
Ethylbenzene	100414	3.47E-04	0.00E+00	0.00E+00	7.23E-05	6.37E-01	3.25E-04	2.84E+00	5.35E-05	4.67E-01	5.78E-05	5.08E-01	3.66E-04	3.21E+00	5.78E-05	5.06E-01
Ethylene Dibromide (EDB)	106934	3.06E-04	0.00E+00	0.00E+00	6.38E-05	5.62E-01	2.87E-04	2.50E+00	4.72E-05	4.12E-01	5.10E-05	4.48E-01	3.23E-04	2.83E+00	5.10E-05	4.46E-01
Ethylene Dichloride (EDC)	107062	5.89E-05	0.00E+00	0.00E+00	1.23E-05	1.08E-01	5.52E-05	4.82E-01	9.08E-06	7.92E-02	9.82E-06	8.62E-02	6.21E-05	5.45E-01	9.82E-06	8.59E-02
Formaldehyde	50000	3.98E-04	0.00E+00	0.00E+00	8.29E-05	7.31E-01	3.73E-04	3.25E+00	6.14E-05	5.35E-01	6.63E-05	5.82E-01	4.20E-04	3.68E+00	6.63E-05	5.81E-01
Hexane	110543	8.12E-04	0.00E+00	0.00E+00	1.69E-04	1.49E+00	7.61E-04	6.64E+00	1.25E-04	1.09E+00	1.35E-04	1.19E+00	8.56E-04	7.51E+00	1.35E-04	1.18E+00
Isopropyl Alcohol	67630	1.62E-03	0.00E+00	0.00E+00	3.38E-04	2.98E+00	1.52E-03	1.32E+01	2.50E-04	2.18E+00	2.70E-04	2.37E+00	1.71E-03	1.50E+01	2.70E-04	2.36E+00
Isopropylbenzene (Cumene)	98828	5.61E-05	0.00E+00	0.00E+00	1.17E-05	1.03E-01	5.26E-05	4.59E-01	8.65E-06	7.55E-02	9.35E-06	8.21E-02	5.91E-05	5.19E-01	9.35E-06	8.18E-02
Methyl Ethyl Ketone (2-butanone)	78933	1.46E-02	0.00E+00	0.00E+00	3.04E-03	2.68E+01	1.37E-02	1.19E+02	2.25E-03	1.96E+01	2.43E-03	2.14E+01	1.54E-02	1.35E+02	2.43E-03	2.13E+01
Methyl Isobutyl Ketone	108101	7.09E-04	0.00E+00	0.00E+00	1.48E-04	1.30E+00	6.65E-04	5.80E+00	1.09E-04	9.54E-01	1.18E-04	1.04E+00	7.47E-04	6.56E+00	1.18E-04	1.03E+00
Napthalene	91203	1.16E-03	0.00E+00	0.00E+00	2.42E-04	2.13E+00	1.09E-03	9.49E+00	1.79E-04	1.56E+00	1.93E-04	1.70E+00	1.22E-03	1.07E+01	1.93E-04	1.69E+00
Perchloroethylene	127184	6.51E-04	0.00E+00	0.00E+00	1.36E-04	1.20E+00	6.10E-04	5.32E+00	1.00E-04	8.76E-01	1.09E-04	9.52E-01	6.86E-04	6.02E+00	1.09E-04	9.50E-01
Styrene	100425	3.59E-04	0.00E+00	0.00E+00	7.48E-05	6.59E-01	3.37E-04	2.94E+00	5.35E-05	4.83E-01	5.98E-05	5.25E-01	3.78E-04	3.32E+00	5.98E-05	5.24E-01
t-1,4-Dichloro-2-butene	764410	8.92E-04	0.00E+00	0.00E+00	1.86E-04	1.64E+00	8.36E-04	7.29E+00	1.38E-04	1.20E+00	1.49E-04	1.30E+00	9.40E-04	8.25E+00	1.49E-04	1.30E+00
Toluene	108883	1.07E-03	0.00E+00	0.00E+00	2.23E-04	1.97E+00	1.00E-03	8.75E+00	1.65E-04	1.44E+00	1.78E-04	1.57E+00	1.13E-03	9.89E+00	1.13E-03	9.89E+00
Trichlorofluoromethane*	75694	1.08E-07	0.00E+00	0.00E+00	2.25E-08	1.98E-04	1.01E-07	8.83E-04	1.67E-08	1.45E-04	1.80E-08	1.58E-04	1.14E-07	9.99E-04	1.80E-08	1.58E-04
Vinyl acetate	108054	1.97E-03	0.00E+00	0.00E+00	4.10E-04	3.62E+00	1.85E-03	1.61E+01	3.04E-04	2.65E+00	3.28E-04	2.88E+00	2.08E-03	1.82E+01	3.28E-04	2.87E+00
Xylenes	1330207	1.80E-03	0.00E+00	0.00E+00	3.75E-04	3.31E+00	1.69E-03	1.47E+01	2.78E-04	2.42E+00	3.00E-04	2.63E+00	1.90E-03	1.66E+01	3.00E-04	2.63E+00

Name		Agricultural Miscellaneous Emissions from Dairy Operations (Milk Parlors)					
Applicability	Use this spreadsheet to characterize the miscellaneous emissions from Dairy sources when VOC rates are known. VOC emission rates linked to RMR worksheet. Enter VOC and NH <sub>3</sub> rates if there is more than one Milk Parlor.						
Author or updater	Matthew Cegielski	Last Update	August 26, 2016				
Facility:	Azevedo Dairy #4						
ID#:	0						
Project #:	0						
More than one Milk Parlor?	N		<b>Formula</b>				
Inputs	VOC lb/yr	NH <sub>3</sub> lb/yr	Select N or Y from the dropdown. If there is more than one Milk Parlor, enter VOC and NH <sub>3</sub> rates. Toxic emissions are calculated by the multiplication of the VOC Rates and Emission Factors.				
Milk Parlor 1	0	0					
Milk Parlor 2	0	0	lb/hr	lb/yr	lb/hr	lb/yr	
VOC Emission Rates			9.64E-02	8.45E+02	0.00E+00	0.00E+00	
Substances	CAS#	Toxic EF's (lb/lb VOC)*	LB/HR	LB/YR	LB/HR	LB/YR	
1,1,2,2-Tetrachloroethane	79345	8.73E-06	8.42E-07	7.37E-03	0.00E+00	0.00E+00	
1,1,2-Trichloroethane	79005	2.26E-04	2.18E-05	1.91E-01	0.00E+00	0.00E+00	
1,2,3-Trichloropropane	96184	2.76E-04	2.66E-05	2.33E-01	0.00E+00	0.00E+00	
1,2,4-Trichlorobenzene	120821	7.79E-04	7.51E-05	6.58E-01	0.00E+00	0.00E+00	
1,2-Dibromo-3-chloropropane	96128	4.94E-05	4.76E-06	4.17E-02	0.00E+00	0.00E+00	
1,2-Dichlorobenzene	95501	5.48E-04	5.28E-05	4.63E-01	0.00E+00	0.00E+00	
1,3-Dichlorobenzene	541731	4.90E-04	4.72E-05	4.14E-01	0.00E+00	0.00E+00	
1,4 Dioxane	123911	1.41E-03	1.36E-04	1.19E+00	0.00E+00	0.00E+00	
1,4-Dichlorobenzene	106467	5.19E-04	5.00E-05	4.38E-01	0.00E+00	0.00E+00	
Acetaldehyde	75070	2.41E-03	2.32E-04	2.04E+00	0.00E+00	0.00E+00	
Acrylonitrile	107131	2.43E-04	2.34E-05	2.05E-01	0.00E+00	0.00E+00	
Benzene	71432	3.19E-04	3.08E-05	2.69E-01	0.00E+00	0.00E+00	
Benzyl chloride	100447	2.89E-04	2.79E-05	2.44E-01	0.00E+00	0.00E+00	
Butyraldehyde	123728	1.14E-04	1.10E-05	9.63E-02	0.00E+00	0.00E+00	
Carbon Disulfide	75150	2.49E-03	2.40E-04	2.10E+00	0.00E+00	0.00E+00	
Carbon tetrachloride	56235	5.87E-05	5.66E-06	4.96E-02	0.00E+00	0.00E+00	
Chlorobenzene	108907	2.72E-04	2.62E-05	2.30E-01	0.00E+00	0.00E+00	
Chloroform	67663	1.31E-04	1.26E-05	1.11E-01	0.00E+00	0.00E+00	
Chloromethane	74873	7.93E-04	7.65E-05	6.70E-01	0.00E+00	0.00E+00	
Crotonaldehyde	4170303	1.41E-04	1.36E-05	1.19E-01	0.00E+00	0.00E+00	
Cyclohexane	110827	6.83E-03	6.59E-04	5.77E+00	0.00E+00	0.00E+00	
Ethyl Chloride	75003	2.39E-04	2.30E-05	2.02E-01	0.00E+00	0.00E+00	
Ethylbenzene	100414	3.47E-04	3.35E-05	2.93E-01	0.00E+00	0.00E+00	
Ethylene Dibromide (EDB)	106934	3.06E-04	2.95E-05	2.58E-01	0.00E+00	0.00E+00	
Ethylene Dichloride (EDC)	107062	5.89E-05	5.68E-06	4.97E-02	0.00E+00	0.00E+00	
Formaldehyde	50000	3.98E-04	3.84E-05	3.36E-01	0.00E+00	0.00E+00	
Hexane	110543	8.12E-04	7.83E-05	6.86E-01	0.00E+00	0.00E+00	
Isopropyl Alcohol	67630	1.62E-03	1.56E-04	1.37E+00	0.00E+00	0.00E+00	
Isopropylbenzene (Cumene)	98828	5.61E-05	5.41E-06	4.74E-02	0.00E+00	0.00E+00	
Methyl Ethyl Ketone (2-butanone)	78933	1.46E-02	1.41E-03	1.23E+01	0.00E+00	0.00E+00	
Methyl Isobutyl Ketone	108101	7.09E-04	6.84E-05	5.99E-01	0.00E+00	0.00E+00	
Napthalene	91203	1.16E-03	1.12E-04	9.80E-01	0.00E+00	0.00E+00	
Perchloroethylene	127184	6.51E-04	6.28E-05	5.50E-01	0.00E+00	0.00E+00	
Styrene	100425	3.59E-04	3.46E-05	3.03E-01	0.00E+00	0.00E+00	
t-1,4-Dichloro-2-butene	764410	8.92E-04	8.60E-05	7.53E-01	0.00E+00	0.00E+00	
Toluene	108883	1.07E-03	1.03E-04	9.04E-01	0.00E+00	0.00E+00	
Trichlorofluoromethane*	75694	1.08E-07	1.04E-08	9.12E-05	0.00E+00	0.00E+00	
Vinyl acetate	108054	1.97E-03	1.90E-04	1.66E+00	0.00E+00	0.00E+00	
Xylenes	1330207	1.80E-03	1.74E-04	1.52E+00	0.00E+00	0.00E+00	
Ammonia	7664417		3.33E-02	2.91E+02	0.00E+00	0.0	

Name	Agricultural Lagoon Emissions from Dairy Operations										
Applicability	Use this spreadsheet when the emissions are from a Dairy Lagoon sources and the VOC rates are known. The VOC rates are linked to the RMR worksheet cells VOC rates in 'Lagoon/Storage Pond row'. Enter values into the Lagoon area calculator on the right to determine area fraction(s). Total ammonia value is linked to the RMR worksheet cells, 'Lagoon/Storage Pond'. Individual Lagoon values are calculated by multiplying the total lagoon ammonia by their area fraction. Entries required in yellow areas, output in gray areas.										
Author or updater	Matthew Cegielski		Last Update	September 12, 2018							
Facility:	Azevedo Dairy #4										
ID#:	0										
Project #:	0										
Inputs	lb/hr	lb/yr	Formula								
VOC Rate	0	2,300	Emissions are calculated by the multiplication of the VOC rates, area fraction, and emission factors.								
			Lagoon Area Fraction		1.00		0.00		0.00		
Substances	CAS#	Emissions Factors lb/VOC*	LB/HR	LB/YR	Lagoon LB/HR	Lagoon LB/YR	Lagoon 2 LB/HR	Lagoon 2 LB/YR	Lagoon 3 LB/HR	Lagoon 3 LB/YR	
1,1,2,2-Tetrachloroethane	79345	3.44E-02	9.02E-03	7.90E+01	9.02E-03	7.90E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
1,1,2-Trichloroethane	79005	7.94E-03	2.08E-03	1.83E+01	2.08E-03	1.83E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
1,2,4-Trimethylbenzene	95636	2.94E-02	7.71E-03	6.75E+01	7.71E-03	6.75E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
1,2-Dichlorobenzene	95501	6.25E-02	1.64E-02	1.44E+02	1.64E-02	1.44E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
1,3-Dichlorobenzene	541731	4.94E-02	1.30E-02	1.14E+02	1.30E-02	1.14E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
1,3-Dichloropropene	542756	7.44E-03	1.95E-03	1.71E+01	1.95E-03	1.71E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
1,4 Dioxane	123911	2.50E-02	6.56E-03	5.75E+01	6.56E-03	5.75E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
1,4-Dichloro-2-butene	764410	6.88E-02	1.80E-02	1.58E+02	1.80E-02	1.58E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
1,4-Dichlorobenzene	106467	5.19E-02	1.36E-02	1.19E+02	1.36E-02	1.19E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Acetaldehyde	75070	1.56E-02	4.10E-03	3.59E+01	4.10E-03	3.59E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Acrylonitrile	107131	7.31E-03	1.92E-03	1.68E+01	1.92E-03	1.68E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Benzene	71432	2.88E-03	7.55E-04	6.61E+00	7.55E-04	6.61E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Benzyl chloride	100447	3.13E-02	8.20E-03	7.19E+01	8.20E-03	7.19E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Carbon disulfide	75150	3.94E-02	1.03E-02	9.05E+01	1.03E-02	9.05E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Chlorobenzene	108907	1.31E-02	3.45E-03	3.02E+01	3.45E-03	3.02E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Cumene	98828	1.94E-02	5.09E-03	4.46E+01	5.09E-03	4.46E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Cyclohexane	110827	8.19E-03	2.15E-03	1.88E+01	2.15E-03	1.88E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Ethyl Chloride	75003	4.63E-03	1.21E-03	1.06E+01	1.21E-03	1.06E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Ethylbenzene	100414	1.00E-02	2.63E-03	2.30E+01	2.63E-03	2.30E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Ethylene Dibromide (EDB)	106934	1.44E-02	3.77E-03	3.31E+01	3.77E-03	3.31E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Ethylene Dichloride (EDC)	107062	4.06E-03	1.07E-03	9.34E+00	1.07E-03	9.34E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Formaldehyde	50000	8.13E-03	2.13E-03	1.87E+01	2.13E-03	1.87E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Hexane	110543	4.31E-03	1.13E-03	9.92E+00	1.13E-03	9.92E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Isopropyl Alcohol	67630	7.50E-03	1.97E-03	1.72E+01	1.97E-03	1.72E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Methyl Ethyl Ketone	78933	1.38E-02	3.61E-03	3.16E+01	3.61E-03	3.16E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Methyl Isobutyl Ketone	108101	1.13E-02	2.97E-03	2.60E+01	2.97E-03	2.60E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Napthalene	91203	1.88E-01	4.92E-02	4.31E+02	4.92E-02	4.31E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Perchloroethylene	127184	1.75E-01	4.59E-02	4.02E+02	4.59E-02	4.02E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Styrene	100425	1.63E-02	4.27E-03	3.74E+01	4.27E-03	3.74E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Toluene	108883	1.25E-02	3.28E-03	2.87E+01	3.28E-03	2.87E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Trichloroethylene	79016	1.12E-02	2.94E-03	2.57E+01	2.94E-03	2.57E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Xylenes	1330207	1.88E-02	4.92E-03	4.31E+01	4.92E-03	4.31E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Ammonia	7664417				1.47E+00	1.288E+04	0.000E+00	0.000E+00	0.000E+00	0.000E+00	



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**Azevedo 4 Construction DPM**  
**Merced County, Annual**

**1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	143.95	1000sqft	3.30	143,950.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	49
<b>Climate Zone</b>	3			<b>Operational Year</b>	2021
<b>Utility Company</b>	Pacific Gas & Electric Company				
<b>CO2 Intensity (lb/MW hr)</b>	641.35	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**

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Project Characteristics -

Land Use -

Construction Phase - Estimated Construction Schedule of 4 months

Trips and VMT - Run is for on-site DPM estimates. Therefore, worker trips have been set to zero.

Grading - Run is for on-site DPM estimates. Therefore, grading acres for fugitive dust have been set to zero.

Vehicle Trips - Construction Run Only

Consumer Products - Construction Run Only

Area Coating - Construction Run Only

Landscape Equipment - Construction Run Only

Energy Use - Construction Run Only

Water And Wastewater - Construction Run Only

Solid Waste - Construction Run Only

Construction Off-road Equipment Mitigation -

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Table Name	Column Name	Default Value	New Value
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	230.00	75.00
tblConstructionPhase	PhaseEndDate	6/6/2022	11/1/2021
tblEnergyUse	LightingElect	2.70	0.00
tblEnergyUse	NT24E	4.16	0.00
tblEnergyUse	NT24NG	3.84	0.00
tblEnergyUse	T24E	1.96	0.00
tblEnergyUse	T24NG	17.03	0.00
tblSolidWaste	SolidWasteGenerationRate	182.28	0.00
tblTripsAndVMT	VendorTripNumber	24.00	0.00
tblTripsAndVMT	WorkerTripNumber	18.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	62.00	0.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	IndoorWaterUseRate	33,993,750.00	0.00

## 2.0 Emissions Summary

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**2.2 Overall Operational**

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr										MT/yr						
Area						0.0000	0.0000										
Energy						0.0000	0.0000										
Mobile						0.0000	0.0000										
Waste						0.0000	0.0000										
Water						0.0000	0.0000										
<b>Total</b>						<b>0.0000</b>	<b>0.0000</b>										

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**3.0 Construction Detail**

**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	7/1/2021	7/7/2021	5	5	
2	Grading	Grading	7/8/2021	7/19/2021	5	8	
3	Building Construction	Building Construction	7/20/2021	11/1/2021	5	75	

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Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

**OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT















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**3.4 Building Construction - 2021**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr										MT/yr						
Hauling						0.0000	0.0000										
Vendor						0.0000	0.0000										
Worker						0.0000	0.0000										
<b>Total</b>						<b>0.0000</b>	<b>0.0000</b>										

**4.0 Operational Detail - Mobile**

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**4.1 Mitigation Measures Mobile**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr										MT/yr						
Mitigated						0.0000	0.0000										
Unmitigated						0.0000	0.0000										

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.492060	0.030872	0.155167	0.115051	0.019669	0.004846	0.015607	0.153483	0.002388	0.002252	0.006351	0.001584	0.000670

5.0 Energy Detail

Historical Energy Use: N





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**5.2 Energy by Land Use - Natural Gas**

**Mitigated**

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Land Use	kBTU/yr	tons/yr										MT/yr						
General Light Industry	0						0.0000	0.0000										
<b>Total</b>							<b>0.0000</b>	<b>0.0000</b>										

**5.3 Energy by Land Use - Electricity**

**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	0				
<b>Total</b>					



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**6.2 Area by SubCategory**

**Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
SubCategory	tons/yr										MT/yr						
Architectural Coating						0.0000	0.0000										
<b>Total</b>						<b>0.0000</b>	<b>0.0000</b>										

**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
SubCategory	tons/yr										MT/yr						
Architectural Coating						0.0000	0.0000										
<b>Total</b>						<b>0.0000</b>	<b>0.0000</b>										

**7.0 Water Detail**

**7.1 Mitigation Measures Water**

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	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated				
Unmitigated				

**7.2 Water by Land Use**

**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0				
<b>Total</b>					

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**7.2 Water by Land Use**

**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0				
<b>Total</b>					

**8.0 Waste Detail**

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**8.1 Mitigation Measures Waste**

**Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated				
Unmitigated				

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**8.2 Waste by Land Use**

**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0				
<b>Total</b>					

**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	0				
<b>Total</b>					

**9.0 Operational Offroad**

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

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**Fire Pumps and Emergency Generators**

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

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**

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## APPENDIX B: AERMOD AND HARP2 ELECTRONIC FILES

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