Appendix B: Air Quality , Greenhouse Gas Emissions, and Energy Supporting Information

THIS PAGE INTENTIONALLY LEFT BLANK

B.1 - Air Quality and Greenhouse Gas Study

THIS PAGE INTENTIONALLY LEFT BLANK

AIR QUALITY STUDY

FOR THE
NORTH RICHMOND WAREHOUSE PROJECT

Prepared for:

Scannell Properties

Prepared by:

KD Anderson & Associates
3853 Taylor Road, Suite G
Loomis, CA 95650
916/660-1555

Project #6563-A-02

February 26, 2021

TABLE OF CONTENTS

SECTION **PAGE**

EXECUTIVE SUMMARY 1

1 INTRODUCTION 2

2 PROJECT DESCRIPTION 3

2.1 Proposed Structures 3
2.2 Location 3
2.3 Existing Site Characteristics And Surrounding Land Uses 6
2.4 Existing Land Use Designation 6
2.5 Project Objectives 6
2.6 Project Features Related To Air Quality And Greenhouse Gas Emissions 7
2.7 Air Quality Analysis Scenarios 7

3 AIR QUALITY STANDARDS AND EXISTING CONDITIONS 11

3.1 Air Pollutants And Ambient Standards 11
3.2 Pollutants Of Concern 11
3.3 Air Quality Monitoring 17
3.4 Attainment Designations 17
3.5 Emissions Inventory 17
3.6 Regulatory Setting 30
3.7 Climate, Topography, Air Pollution Potential 39

4 SHORT-TERM CONSTRUCTION IMPACTS 45

4.1 Significance Thresholds 45
4.2 Methodology 47
4.3 Impacts 49

5 LONG-TERM OPERATIONAL IMPACTS 54

5.1 Significance Thresholds 54
5.2 Methodology 54
5.3 Impacts 54

6 LOCAL CARBON MONOXIDE IMPACTS 61

6.1 Significance Thresholds 61
6.2 Methodology 62
6.3 Impacts 62

TABLE OF CONTENTS

SECTION **PAGE**

7 TOXIC AIR CONTAMINANT IMPACTS 63

7.1 Significance Thresholds 63
7.2 Methodology 64
7.3 Impacts 66

8 GLOBAL CLIMATE CHANGE AND GREENHOUSE GAS IMPACTS 69

8.1 Significance Thresholds 69
8.2 Methodology 70
8.3 Impacts 70

REFERENCES 80

TECHNICAL APPENDIX 83

TABLE OF CONTENTS

TABLES

1. North Richmond Warehouse Project Air Quality Analysis Scenarios
2. Ambient Air Quality Standards
3. Ozone and Carbon Monoxide Air Quality Monitoring Results
4. Particulate Matter Air Quality Monitoring Results
5. Air Quality Attainment Status Designations for San Francisco Bay Area Air Basin
6. Contra Costa County Emissions Inventory for 2012
7. Contra Costa County Emissions Forecast for 2035
8. California Greenhouse Gas Inventory for 2000 - 2017
9. California Greenhouse Gas Emissions Forecast for 2009 - 2020
10. Greenhouse Gas Emissions in Contra Costa County by Sector by Year
11. Bay Area Air Quality Management District Significance Thresholds
12. Construction-Period Emissions
13. Operational Emissions - Scenario 1
14. Operational Emissions - Scenario 2
15. Operational Emissions - Scenario 3
16. Operational Emissions - Scenario 4
17. Thresholds of Significance for Public Health Risks
18. Summary of Maximum Health Risks at the Project Area
19. Operational Greenhouse Gas Emissions - Scenario 1
20. Operational Greenhouse Gas Emissions - Scenario 2
21. Operational Greenhouse Gas Emissions - Scenario 3
22. Operational Greenhouse Gas Emissions - Scenario 4

FIGURES

1. Project Location
2. Site Plan

TECHNICAL APPENDIX

CalEEMod and EMFAC2017 Model Output Reports

EXECUTIVE SUMMARY

This *Executive Summary* is a brief overview of the analysis presented in this *Air Quality Study*. It is not intended to be a comprehensive description of the analysis. For more details, the reader is referred to the full description presented in this study.

The proposed North Richmond Warehouse Project would be two new stand alone warehouse fulfillment buildings in unincorporated Contra Costa County near Richmond, California.

This *Air Quality Study* presents an evaluation of the construction-related and operational impacts of the Proposed Project on the air quality environment.

The project would be located within the San Francisco Bay Area Air Basin (SFBAAB). The project site is designated a nonattainment area for both state and federal ozone standards. The project site is in a nonattainment area for federal and state standards for fine particulate matter smaller than 2.5 microns in diameter ($PM_{2.5}$). The area is designated nonattainment and unclassified for inhalable particulate matter smaller than 10 microns in diameter (PM_{10}). The area is designated attainment or unclassified for carbon monoxide (CO), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2).

Implementation of the North Richmond Warehouse Project would result in the generation of short-term construction-related air pollutant emissions. With implementation of mitigation measures, the project is considered to have a less than significant impact on construction-related emissions.

Air quality impacts due to long-term operation of the project were assessed by evaluating criteria pollutant emissions. Operation of the project is considered to have a less-than-significant impact on criteria pollutant air quality.

The project-related effect on CO concentrations was assessed. The project was found to have a less than significant impact on CO concentrations.

Impacts associated with toxic air contaminants were assessed. These impacts were found to be less than significant.

An assessment of the effects of the North Richmond Warehouse Project on global climate change was conducted. The project-related change in emissions of greenhouse gases (GHG) was quantified. With implementation of mitigation measures, the project is determined to have a less-than-significant impact on global climate change.

SECTION 1
INTRODUCTION

This *Air Quality Study* has been prepared to assess the air quality impacts of the North Richmond Warehouse Project. This study contains information that will be used in the preparation of a California Environmental Quality Act (CEQA) environmental compliance document for this project. The County of Contra Costa is the CEQA lead agency for the project environmental review.

The purpose of this *Air Quality Study* is to provide documentation of the air quality resources in the project area, and an assessment of the impacts of the project on the air quality environment.

This *Air Quality Study* presents an assessment of the localized air quality impacts of the Proposed Project, the impacts of the project on regional air quality, construction-related impacts of the project, and the impacts on global climate change.

Following this *Introduction* section, this *Air Quality Study* presents a description of:

- the Proposed Project,
- air quality standards and existing air quality conditions,
- short-term construction-related impacts,
- long-term operational impacts,
- local CO impacts,
- impacts associated with toxic air contaminant emissions, and
- impacts on global climate change and GHG emissions.

SECTION 2
PROJECT DESCRIPTION

The following is a description of the North Richmond Warehouse Project and the project scenarios analyzed for this *Air Quality Study* (Anderson pers. comm.).

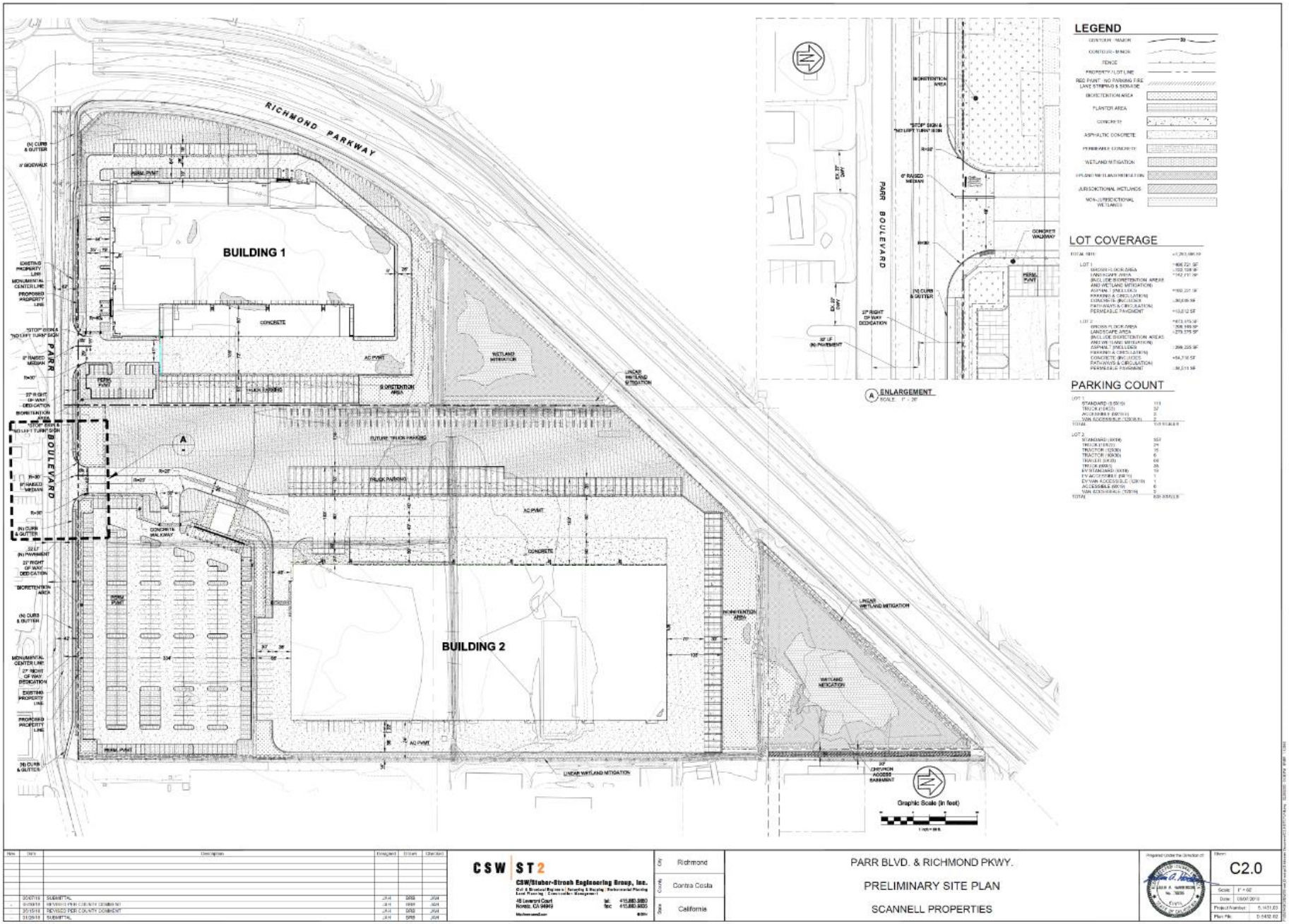
2.1 PROPOSED STRUCTURES

The North Richmond Warehouse Project site plan is shown in **Figure 1**. The Proposed Project would include two warehouse fulfillment buildings totaling approximately 330,974 square feet (sf) of gross floor area. Building 1 would be located on the southwestern corner of the project site and would include approximately 122,128 sf. The occupier for Building 1 is unknown at this time. Building 2 would be located along the eastern boundary of the project site and would include approximately 208,846 sf of gross floor area. Building 2 would likely be leased to the FedEx Corporation as a sort and distribution center for proximal North Bay routes.

2.2 LOCATION

The project would be located on a 29.4-acre site in unincorporated Contra Costa County in the North Richmond area. As shown in **Figure 2**, the project site is located on the northeast corner of the intersection of Richmond Parkway and Parr Boulevard. The site is bound by Richmond Parkway to the north and west, Parr Boulevard and industrial/commercial properties to the south, and industrial and commercial properties to the east.

There are several Alameda-Contra Costa Transit District (AC District) stops located to the south of the site. The nearest Bay Area Rapid Transit (BART) station (Richmond Station) is located approximately 2.3 miles southeast of the site. Interstate 580 (I-580) and the Richmond-San Rafael Bridge are located approximately 2.9 miles southwest, and I-80 is located 2.2 miles to the east.

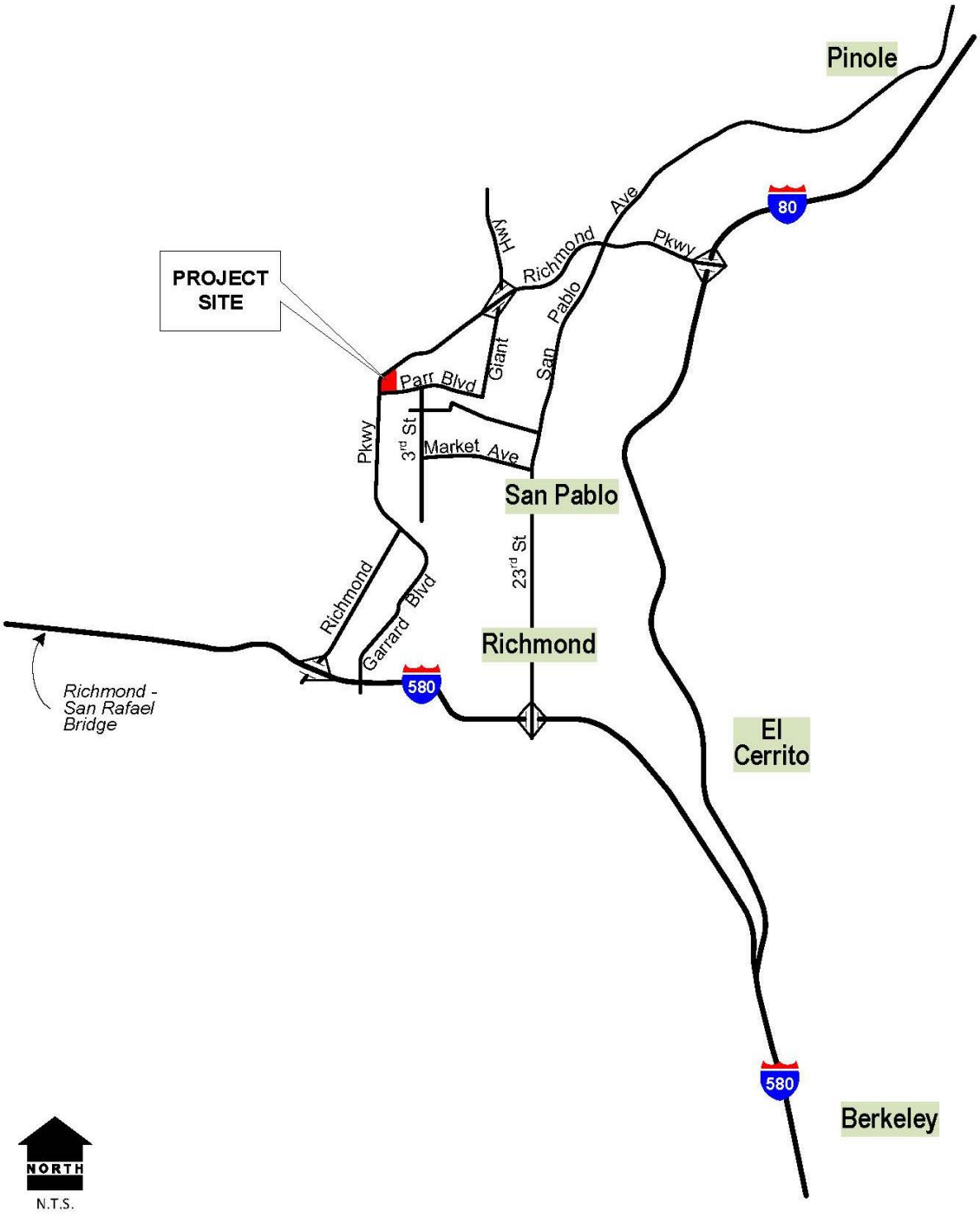


KD Anderson & Associates, Inc.
Transportation Engineers

SITE PLAN

6563-A-02 RA 4/7/2020

figure 1



PROJECT LOCATION

KD Anderson & Associates, Inc.
Transportation Engineers

6563-A-02 RA 4/6/2020

North Richmond Warehouse Project Air Quality Study

figure 2

2.3 EXISTING SITE CHARACTERISTICS AND SURROUNDING LAND USES

The project site is relatively flat in elevation (approximately 5 to 10 feet above mean sea level) with a gentle topographic sloping in the northwest direction. The project site contains three vacant one-story buildings at 81 Parr Boulevard, which occupy approximately 2,000 sf, 3,200 sf, and 8,000 sf, respectively. Concrete and asphalt cover the grounds surrounding these buildings, while the remaining areas of the project site are overgrown with grasses, shrubs, weeds, and dispersed trees. At 155 and 177 Parr Boulevard there are scattered concrete floor and foundation slabs present from former buildings. In addition, chain-link fencing surrounds the perimeter of the project site.

The area around the project site is mostly developed with industrial uses. San Pablo Bay is approximately 0.4-mile north of the project site. Across Richmond Parkway and to the north of the project site is Wildcat Creek Marsh, which consists of tidal marshes and mudflats. The land directly to the east of the project site is used for industrial purposes (salvage and recycling, sign production, and a warehouse) and the land to the west of the site across Richmond Parkway is used for industrial purposes (equipment rentals). There is a single-family home located approximately 0.2-mile east of the project site. To the south is a recreational vehicle (RV) storage yard. The nearest surface water feature is San Pablo Creek, located approximately 480 feet south of the project site.

2.4 EXISTING LAND USE DESIGNATION

The Contra Costa County General Plan (General Plan) designates the site Heavy Industry. Pursuant to the General Plan Land Use Element, the Heavy Industry designation allows a maximum site coverage up to 30 percent, 45 employees per gross acre, and a floor-to-area ratio (FAR) between 0.1 and 0.4. Primary land uses include heavy equipment operation and similar activities, metalworking, and chemical or petroleum product processing and refining.

2.5 PROJECT OBJECTIVES

The objectives of the North Richmond Warehouse Project are to:

- Develop industrial uses in North Richmond, in accordance with the General Plan, given the completion of major flood control and expressway projects in the project vicinity.
- Redevelop and clean up an existing site with a contemporary industrial project to further the revitalization of the Richmond Parkway area, consistent with the County's General Plan and zoning.
- Implement policies of importance to the County, as reflected in the General Plan, including the County's December 11, 2018 adopted General Plan Amendment (GPA) GP18-0004 to the Conservation Element 8.14 requiring industrial projects, such as the Proposed Project, to incorporate measures to reduce or eliminate otherwise preventable air quality impacts and GHG emissions. This project would be consistent with this GPA.

- Facilitate regional air quality goals by locating new distribution warehouse uses more proximate to Bay Area urban infill centers, such as the Richmond Parkway to reduce vehicle miles traveled (VMT) from more rural locations such as Solano County or Tracy. (The proposed FedEx use in Building 2 could reduce VMT by approximately 25 percent with the locational efficiency of this proposed site rather than an existing facility in Fairfield).
- Provide jobs primarily to local and regional workers. The proposed FedEx user for Building 2 intends to hire as many local workers as possible and would hold local hiring fairs. For this *Air Quality Study*, the overall project is estimated to result in 175 on-site employees. An unknown number of additional people may be present on the project site as contractors, employed by business partners, or involved with transport of material.
- Provide a substantial increase in tax and other revenue by developing a project with an estimated increased valuation of $75 million.

2.6 PROJECT FEATURES RELATED TO AIR QUALITY AND GREENHOUSE GAS EMISSIONS

To reduce the air quality impacts of the North Richmond Warehouse Project, a series of combinations of control measures are proposed and being considered. The Proposed Project would include the following:

- Both Building 1 and Building 2 would be built to Leadership in Energy and Environmental Design (LEED) standards and would include solar photovoltaic panels on the roof.
- Infrastructure for future electric charging stations would be installed at every truck dock position.
- Vehicle charging stations would be installed for 20 employees.

2.7 AIR QUALITY ANALYSIS SCENARIOS

In addition to the measures listed immediately above, several alternative project configurations are being considered which include measures applied to:

- on-site service vehicles which include yard hostlers, tuggers and forklifts;
- delivery trucks and vans; and
- heavy-duty trucks.

Drayage vehicles would not be used in the North Richmond Warehouse Project (Anderson pers. comm.).

For this *Air Quality Study*, a series of project configurations and analysis years are evaluated (Avila pers. comm.). The alternative project configurations are referred to as:

- Scenario 1,
- Scenario 2,
- Scenario 3, and
- Scenario 4.

The availability of measures to reduce air quality impacts is expected to increase in the future. As a result, some of the analysis scenarios include measures phased-in over time. For this *Air Quality Study*, some of the scenarios include different measures implemented in the years:

- 2021 (project opening year),
- 2023,
- 2025, and
- 2027.

These scenarios are described below and summarized in **Table 1**.

2.7.1 Scenario 1

Scenario 1 is considered a base condition which assumes statewide average composition of project-related on-site service vehicles, delivery vehicles and heavy-duty trucks. This scenario does not assume application of air quality measures applied to reduce emissions below the level already required to comply with existing vehicle emission standards. In the analysis years 2021, 2023, 2025 and 2027, it is assumed:

- on-site service vehicles would to be diesel-powered,
- delivery vehicles would be diesel-powered, and
- heavy-duty trucks would be diesel-powered.

Drayage vehicles would not be used in the North Richmond Warehouse Project (Anderson pers. comm.).

2.7.2 Scenario 2

Scenario 2 assumes relatively early implementation of measures to reduce emissions from project-related on-site service vehicles, delivery vehicles and heavy-duty trucks. In the analysis years 2021, 2023, 2025 and 2027, it is assumed on-site service vehicles would to be zero emission vehicles (ZEV). For delivery vehicles, it is assumed the use of ZEV would be phased in with 25 percent ZEV in 2021, 35 percent ZEV in 2023, 45 percent ZEV in 2025, and 55 percent ZEV in 2027. Drayage vehicles would not be used in the North Richmond Warehouse Project (Anderson pers. comm.).

In the analysis years 2021 and 2023, it is assumed project-related heavy-duty trucks would to be model years 2014 or later. This would reduce project-related emissions because later model year vehicles are subject to relatively stringent vehicle emissions standards.

For Scenario 2, in the years 2025 and 2027, 25 percent of heavy-duty trucks are assumed to be ZEV and 75 percent of heavy-duty trucks are assumed to be model year 2014 or later.

Table 1. North Richmond Warehouse Project Air Quality Analysis Scenarios

Scenario Name	Years	Type of Vehicle: On-Site Service Vehicles	Type of Vehicle: Delivery Trucks and Vans	Type of Vehicle: Heavy-Duty Trucks
Scenario 1 (Reference only)	2021	Diesel	Diesel	Diesel
	2023	Diesel	Diesel	Diesel
	2025	Diesel	Diesel	Diesel
	2027	Diesel	Diesel	Diesel
Scenario 2 (Reference only)	2021	ZEV	25% ZEV 75% Diesel	100% 2014 or Later
	2023	ZEV	35% ZEV 65% Diesel	100% 2014 or Later
	2025	ZEV	45% ZEV 55% Diesel	25% ZEV 75% 2014 or Later
	2027	ZEV	55% ZEV 45% Diesel	25% ZEV 75% 2014 or Later
Scenario 3 (BAAQMD scenario)	2021	ZEV	50% ZEV 50% Diesel	100% 2014 or Later
	2023	ZEV	65% ZEV 35% Diesel	100% 2014 or Later
	2025	ZEV	75% ZEV 25% Diesel	50% ZEV 50% 2014 or Later
	2027	ZEV	85% ZEV 15% Diesel	50% ZEV 50% 2014 or Later
Scenario 4 (County COA's)	2021	ZEV	33% ZEV 67% Diesel	100% 2014 or Later
	2023	ZEV	65% ZEV 35% Diesel	100% 2014 or Later
	2025	ZEV	80% ZEV 20% Diesel	100% ZEV
	2027	ZEV	100% ZEV	100% ZEV

Notes: "ZEV" = zero emission vehicle. "2014 or Later" = model year 2014 or later.
Photovoltaic generation included in Scenarios 2, 3, and 4. Not in Scenario 1.
Drayage vehicles would not be used in the North Richmond Warehouse Project (Anderson pers. comm.).

2.7.3 Scenario 3

Scenario 3 assumes the use of ZEV is higher for delivery vehicles and heavy duty trucks, compared to Scenario 2.

On-site service vehicles are assumed to be ZEV in all years. For delivery vehicles, it is assumed the use of ZEV would be phased in with 50 percent ZEV in 2021, 65 percent ZEV in 2023, 75 percent ZEV in 2025, and 85 percent ZEV in 2027. Drayage vehicles would not be used in the North Richmond Warehouse Project (Anderson pers. comm.).

As with Scenario 2, Scenario 3 assumes heavy-duty trucks in the analysis years 2021 and 2023 would be model years 2014 or later. In the years 2025 and 2027, 50 percent of heavy-duty trucks are assumed to be ZEV and 50 percent of heavy-duty trucks are assumed to be model year 2014 or later.

2.7.4 Scenario 4

In Scenario 4, on-site service vehicles are assumed to be ZEV in all analysis years. Drayage vehicles would not be used in the North Richmond Warehouse Project (Anderson pers. comm.).

It is assumed the use of ZEV for delivery vehicles would be phased in with 33 percent ZEV in the year 2021, 65 percent ZEV in the year 2023, 80 percent ZEV in the year 2025, and 100 percent in the year 2027.

As with Scenario 2 and Scenario 3, Scenario 4 assumes heavy-duty trucks in the analysis years 2021 and 2023 would be model years 2014 or later. In the analysis years 2025 and 2027, 100 percent of heavy-duty trucks are assumed to be ZEV.

2.7.5 Solar Photovoltaic Generation

Scenario 2, Scenario 3 and Scenario 4 would include the installation and operation of solar photovoltaic panels. For this *Air Quality Study*, solar photovoltaic generation is estimated to provide 100 percent of expected building load.

SECTION 3
AIR QUALITY STANDARDS AND EXISTING CONDITIONS

The following is a description of ambient air quality standards and existing air quality conditions in the North Richmond Warehouse Project study area.

3.1 AIR POLLUTANTS AND AMBIENT STANDARDS

Both the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (ARB) have established ambient air quality standards for common pollutants. These ambient air quality standards indicate levels of contaminants that represent safe levels, to avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called "criteria" pollutants because the health and other effects of each pollutant are described in criteria documents. The federal and state ambient air quality standards are presented in **Table 2** (California Air Resources Board 2020a). The federal and state ambient standards were developed independently with differing purposes and methods, although both processes attempted to avoid health-related effects. As a result, the federal and state standards differ in some cases. In general, the California state standards are more stringent, as is the case for ozone, PM_{10}, and $PM_{2.5}$.

There are three basic designation categories: nonattainment, attainment, and unclassified. A "nonattainment" designation indicates that the air quality violates an ambient air quality standard. Although a number of areas may be designated as nonattainment for a particular pollutant, the severity of the problem can vary greatly. To identify the severity of the problem and the extent of planning required, nonattainment areas are assigned a classification that is commensurate with the severity of their air quality problem (e.g., moderate, serious, severe). In contrast to nonattainment, an "attainment" designation indicates that the air quality does not violate the established standard. Finally, an "unclassified" designation indicates that there are insufficient data for determining attainment or nonattainment. EPA combines unclassified and attainment into one designation for ozone, CO, PM_{10} and $PM_{2.5}$.

3.2 POLLUTANTS OF CONCERN

For projects similar to the Proposed Project, criteria pollutants that are of greatest concern are ozone, particulate matter, and CO. In addition, this *Air Quality Study* presents an analysis of the project-related effects on global climate change.

Table 2. Ambient Air Quality Standards

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes on next page …

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (5/4/16)**

Table 2. Ambient Air Quality Standards (Continued)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (5/4/16)**

3.2.1 Ozone

Prior to 2005, both state and federal standards for ozone were set for a one-hour averaging time. The state ozone standard is 0.09 parts per million (ppm), not to be exceeded. The federal one-hour standard was 0.12 ppm and was not to be exceeded more than three times in any three-year period. A federal eight-hour standard for ozone was issued in July 1997 by Executive Order of the President. The eight-hour ozone standard has been set at a concentration of 0.070 ppm ozone measured over eight hours.

As of June 15, 2005, the federal one-hour ozone standard was revoked. In setting the eight-hour ozone standard, EPA concluded that replacing the existing one-hour standard with an eight-hour standard was appropriate to provide adequate and more uniform protection of public health from both short-term (one to three hours) and prolonged (six to eight hours) exposures to ozone.

Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors, which include reactive organic compounds (ROG) and nitrogen oxides (NO_x), react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Once formed, ozone remains in the atmosphere for one or two days. It is then eliminated through chemical reaction with plants and by rainout and washout.

3.2.2 Particulate Matter

State and federal standards for particulate matter are based on micrograms per cubic meter ($\mu g/m^3$) for a 24-hour average and as an annual geometric mean.

PM_{10} is sometimes referred to as "inhalable particulate matter" or "respirable particulate matter". The state standards for PM_{10} are 50 $\mu g/m^3$ 24-hour average, and 20 $\mu g/m^3$ annual geometric mean. The federal PM_{10} standard is a 24-hour average of 150 $\mu g/m^3$.

A federal standard for particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) was issued in July 1997 by Executive Order of the President. $PM_{2.5}$ is sometimes referred to as "fine particulate matter". The $PM_{2.5}$ standard has been set at a concentration of 12 $\mu g/m^3$ annually and 35 $\mu g/m^3$ daily. The federal standards for PM_{10} are being maintained so that relatively larger, courser particulate matter continues to be regulated. The state $PM_{2.5}$ standard is an annual average of 12 $\mu g/m^3$.

PM_{10} and $PM_{2.5}$ can reach the lungs when inhaled, resulting in health concerns related to respiratory disease. Suspended particulate matter can also affect vision or contribute to eye irritation. PM_{10} can remain in the atmosphere for up to seven days before removal by gravitational settling, rainout and washout.

3.2.3 Carbon Monoxide

State and federal CO standards have been set for both one-hour and eight-hour averaging times. The state one-hour standard is 20 ppm by volume, while the federal one-hour standard is 35 ppm. Both state and federal standards are 9 ppm for the eight-hour averaging period. CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

3.2.4 Greenhouse Gases

The average surface temperature of the Earth has risen by about one degree Fahrenheit in the past century, with most of that occurring during the past two decades (World Meteorological Organization, 2005). There is evidence that most of the warming over the last 50 years is due to human activities. Human activities, such as energy production and internal combustion vehicles, have increased the amount of climate-changing gases in the atmosphere, which in turn is causing the Earth's average temperature to rise. Rises in average temperature are leading to changes in climate patterns, shrinking polar ice caps and a rise in sea level, with a host of corresponding impacts to humans and ecosystems.

Gases which affect global climate are referred to as greenhouse gases (GHG). Greenhouse gases are atmospheric gases that act as global insulators by reflecting visible light and infrared radiation back to Earth. Some GHG, such as water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), occur naturally and are emitted to the atmosphere through natural processes. Although CO_2, CH_4, and N_2O occur naturally in the atmosphere, human activities have changed their atmospheric concentrations. From 1750 to 2004, concentrations of CO_2, CH_4, and N_2O have increased globally by 35, 143, and 18 percent, respectively. Other greenhouse gases, such as fluorinated gases, are created and emitted solely through human activities. (U.S. Environmental Protection Agency 2006)

The principal GHG that enter the atmosphere because of human activities are CO_2, CH_4, N_2O, and fluorinated gases. Carbon dioxide is the gas that is most commonly referenced when discussing climate change because it is the most commonly emitted gas. While some of the less common gases do make up less of the total GHG emitted to the atmosphere, some have more effect per molecule than CO_2.

Carbon Dioxide. The natural production and absorption of CO_2 is achieved through the terrestrial biosphere and the ocean. However, humankind has altered the natural carbon cycle by burning coal, oil, natural gas, and wood. Since the industrial revolution began in the mid-1700s, each of these activities has increased in scale and distribution. Carbon dioxide was the first GHG demonstrated to be increasing in atmospheric concentration, with the first conclusive

measurements being made in the last half of the 20th Century. Prior to the industrial revolution, concentrations were fairly stable at 280 ppm. Today, they are around 370 ppm, an increase of well over 30 percent (U.S. Environmental Protection Agency 2006). Left unchecked, the concentration of CO_2 in the atmosphere is projected to increase to a minimum of 535 ppm by 2100 as a direct result of anthropogenic (manmade) sources. This could result in an average global temperature rise of at least two degrees Celsius (Intergovernmental Panel on Climate Change 2007). The California Energy Commission (CEC) estimates that CO_2 emissions account for 84 percent of California's anthropogenic GHG emissions, nearly all of which is associated with fossil fuel combustion (California Energy Commission 2005).

Methane. Methane is an extremely effective absorber of radiation, though its atmospheric concentration is less than CO_2 and its lifetime in the atmosphere is brief (10 – 12 years), compared to some other GHG (such as CO_2, N_2O, and chlorofluorocarbons). Methane has both natural and anthropogenic sources. Landfills, natural gas distribution systems, agricultural activities, fireplaces and wood stoves, stationary and mobile fuel combustion, and gas and oil production fields categories are the major sources of these emissions (U.S. Environmental Protection Agency 2006). The CEC estimates that CH_4 emissions from various sources represent 6.2 percent of California's total GHG emissions (California Energy Commission 2005).

Nitrous Oxide. Concentrations of N_2O also began to rise at the beginning of the industrial revolution. Nitrous oxide is produced by microbial processes in soil and water, including those reactions which occur in fertilizers that contain nitrogen. Use of these fertilizers has increased over the last century. Global concentration for N_2O in 1998 was 314 parts per billion (ppb), and in addition to agricultural sources for the gas, some industrial processes (fossil fuel fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load (U.S. Environmental Protection Agency 2006). The CEC estimates that N_2O emissions from various sources represent 6.6 percent of California's total GHG emissions (California Energy Commission 2005).

Fluorinated Gases. Fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6), are powerful GHG emissions that are emitted from a variety of industrial processes. Fluorinated gases are occasionally used as substitutes for ozone-depleting substances such as chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and halons, which have been regulated since the mid-1980s because of their ozone destroying potential. Fluorinated gases are typically emitted in smaller quantities than CO_2, CH_4, and N_2O, but each molecule can have a much greater global warming effect. Therefore, fluorinated gases are sometimes referred to as High Global Warming Potential (GWP) gases (U.S. Environmental Protection Agency 2006). The primary sources of fluorinated gas emissions in the United States include the production of HCFC-22 electrical transmission and distribution systems, semiconductor manufacturing, aluminum production, magnesium production and processing, and substitution for ozone-depleting substances. The CEC estimates that fluorinated gas emissions from various sources represent 3.4 percent of California's total GHG emissions (California Energy Commission 2005).

3.3 AIR QUALITY MONITORING

Table 3 presents air quality monitoring data for ozone and CO. **Table 4** presents monitoring data for PM_{10}, and $PM_{2.5}$. Data for the latest available three-year period (2016 through 2018) are presented for the monitoring stations closest to the project site. Data for CO in Contra Costa County are unavailable for the period 2013 through 2018. **Table 4** shows recent exceedances of the PM_{10} and $PM_{2.5}$ standards.

3.4 ATTAINMENT DESIGNATIONS

The current air quality attainment designations for the SFBAAB are summarized in **Table 5.**

As shown in **Table 5**, the SFBAAB is designated nonattainment for the state and federal ozone standards.

The SFBAAB is designated nonattainment for the state PM_{10} standard, and unclassified for the federal PM_{10} standard. The air basin is designated nonattainment for both the state and federal $PM_{2.5}$ standards.

The SFBAAB is designated either attainment or unclassified for the remaining federal and state air quality standards.

3.5 EMISSIONS INVENTORY

Table 6 presents estimates of emissions currently generated in Contra Costa County. The information presented in **Table 6** is divided into emission source categories. **Table 7** presents a forecast of emissions expected to be generated in Contra Costa County in the year 2035. Like **Table 6**, the information presented in **Table 7** is divided into emission source categories.

For current emissions, shown in **Table 6**, the major source category that generates the largest amount of ROG, CO, and NO_x emissions in Contra Costa County is On-Road Motor Vehicles. For current emissions, the major source category that generates the largest amount of PM_{10} and $PM_{2.5}$ emissions in Contra Costa County is Miscellaneous Processes. The largest subcategory within this category is Residential Fuel Combustion.

For 2035 forecasted emissions, shown in **Table 7**, the major source category expected to generate the largest amount of ROG emissions in Contra Costa County is Solvent Evaporation; the largest subcategory within this category is Consumer Products. The major source category expected to generate the largest amount of CO emissions is Other Mobile Sources; the largest subcategory within this category is Off-Road Equipment. The major source category expected to generate the largest amount of NO_x emissions is Fuel Combustion; the largest subcategory within this category is Petroleum Refining (Combustion). The major source category expected to generate the largest amount of PM_{10} and $PM_{2.5}$ emissions is Miscellaneous Processes; the largest subcategory within this category is Residential Fuel Combustion.

Table 3. Ozone and Carbon Monoxide Air Quality Monitoring Results

Pollutant Type, Station and Measurement	Air Quality Standard	Pollutant Concentration by Year 2016	2017	2018
Ozone at Contra Costa County -- San Pablo-Rumrill Blvd				
Highest 1-Hour Average (parts per million)	0.09	0.094	0.104	0.061
Second Highest 1-Hour Average (parts per million)	(State)	0.070	0.097	0.061
Highest 8-Hour Average (parts per million)	0.070	0.061	0.080	0.052
Second Highest 8-Hour Average (parts per million)	(State)	0.058	0.073	0.050
	Air Quality Standard	**2011**	**2012**	**2013**
Carbon Monoxide at Contra Costa County -- San Pablo-Rumrill Blvd				
Highest 8-Hour Average (parts per million)	9.0	0.99	0.92	- -
Second Highest 8-Hour Average (parts per million)	(State)	0.91	0.89	- -

Source: California Air Resources Board website: http://www.arb.ca.gov/

Note: Data for Carbon Monoxide in Contra Costa County are unavailable for 2013 through 2018.

Dashes ("- -") indicate data are not available.

Table 4. Particulate Matter Air Quality Monitoring Results

Pollutant Type, Station and Measurement	Air Quality Standard	Pollutant Concentration by Year 2016	2017	2018
Inhalable Particulate Matter (PM_{10}) at Contra Costa County -- San Pablo-Rumrill Blvd				
Highest 24-Hour Average (micrograms/cubic meter)	50	0.3	98.0	201.0
Second Highest 24-Hour Average (micrograms/cubic meter)	(State)	30.0	62.0	108.0
Annual Average (micrograms/cubic meter)	20 (State)	15.2	20.4	21.5
Fine Particulate Matter ($PM_{2.5}$) at Contra Costa County -- San Pablo-Rumrill Blvd				
Highest 24-Hour Average (micrograms/cubic meter)	35	19.5	71.2	195.4
Second Highest 24-Hour Average (micrograms/cubic meter)	(Federal)	18.0	68.5	143.0
Annual Average (micrograms/cubic meter)	12 (State)	8.0	10.7	12.7

Source: California Air Resources Board website: http://www.arb.ca.gov/

Note: Dashes (" - - ") indicate insufficient data or no data are available.

Table 5. Air Quality Attainment Status Designations for San Francisco Bay Area Air Basin

Pollutant	State Standards [1]	National Standards [2]
Ozone	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Inhalable Particulate Matter (PM_{10})	Nonattainment	Unclassified
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment	Nonattainment
Sulfates	Attainment	N/A
Lead	N/A	Attainment
Hydrogen Sulfide	Unclassified	N/A
Visibility Reducing Particles	Unclassified	N/A

Notes: N/A – not applicable, standard does not exist for the pollutant.

[1] California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter PM10, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, Lake Tahoe carbon monoxide, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average (i.e., all standards except for lead and the PM10 annual standard), then some measurements may be excluded. In particular, measurements are excluded that ARB determines would occur less than once per year on the average. The Lake Tahoe CO standard is 6.0 ppm, a level one-half the national standard and two-thirds the state standard.

[2] National standards shown are the "primary standards" designed to protect public health. National standards other than for ozone, particulates and those based on annual averages are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the 4th highest daily concentrations is 0.075 ppm (75 ppb) or less. The 24-hour PM10 standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 µg/m3. The 24-hour PM2.5 standard is attained when the 3-year average of 98th percentiles is less than 35 µg/m3.

Source: Bay Area Air Quality Management District

Table 6. Contra Costa County Emissions Inventory for 2012

Emission Category	Reactive Organic Gases	Carbon Monoxide	Nitrogen Oxides	Inhalable Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Fuel Combustion					
Electric Utilities	0.15	0.74	1.23	--	--
Cogeneration	0.14	2.07	1.66	--	--
Oil and Gas Production (Combustion)	0.00	0.00	0.03	--	--
Petroleum Refining (Combustion)	1.62	4.32	6.92	--	--
Manufacturing and Industrial	0.32	2.09	1.61	0.31	0.31
Food and Agricultural Processing	0.00	0.04	0.09	0.00	0.00
Service and Commercial	0.27	1.81	1.46	0.25	0.25
Other (Fuel Combustion)	0.02	0.09	0.35	0.01	0.01
Subtotal	**2.52**	**11.16**	**13.35**	**0.57**	**0.57**
Waste Disposal					
Sewage Treatment	0.07	0.01	0.13	--	--
Landfills	0.16	- -	0.00	--	--
Incinerators	0.19	0.15	0.15	--	--
Soil Remediation	0.00	- -	- -	--	--
Other (Waste Disposal)	0.00	- -	- -	- -	- -
Subtotal	**0.42**	**0.16**	**0.28**	**0.00**	**0.00**
Cleaning and Surface Coatings					
Laundering	0.01	- -	- -	- -	- -
Degreasing	0.25	- -	- -	- -	- -
Coatings and Related Process Solvents	0.90	0.00	0.00	- -	- -
Printing	0.45	0.00	0.01	- -	- -
Adhesives and Sealants	0.87	- -	- -	- -	- -
Other (Cleaning and Surface Coating)	0.00	- -	- -	- -	- -
Subtotal	**2.48**	**0.00**	**0.01**	**- -**	**- -**
Petroleum Production and Marketing					
Oil and Gas Production	0.06	- -	- -	- -	- -
Petroleum Refining	5.20	0.72	0.57	- -	- -
Petroleum Marketing	2.19	- -	- -	- -	- -
Other (Petroleum Production and Marketing)	0.00	- -	- -	- -	- -
Subtotal	**7.45**	**0.72**	**0.57**	**0.00**	**0.00**
Industrial Processes					
Chemical	1.07	0.10	0.07	0.00	0.00
Food and Agriculture	0.20	0.25	0.02	0.11	0.03
Mineral Processes	0.49	0.26	1.97	0.52	0.12
Metal Processes	0.06	0.03	0.10	0.01	0.01
Wood and Paper	- -	- -	0.00	0.00	0.00
Electronics	- -	- -	- -	- -	- -
Other (Industrial Processes)	1.51	0.52	0.09	- -	- -
Subtotal	**3.33**	**1.16**	**2.25**	**0.64**	**0.16**

Table 6. Contra Costa County Emissions Inventory for 2012 (Continued)

Emission Category	Reactive Organic Gases	Carbon Monoxide	Nitrogen Oxides	Inhalable Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Solvent Evaporation					
Consumer Products	5.72	- -	- -	- -	- -
Architectural Coatings & Related Process Solvents	2.51	- -	- -	- -	- -
Pesticides/Fertilizers	0.14	- -	- -	- -	- -
Asphalt Paving / Roofing	0.11	- -	- -	- -	- -
Subtotal	**8.48**	**- -**	**- -**	**- -**	**- -**
Miscellaneous Processes					
Residential Fuel Combustion	2.11	33.84	2.47	4.55	4.39
Farming Operations	0.38	- -	- -	0.29	0.04
Construction and Demolition	- -	- -	- -	4.49	0.45
Paved Road Dust	- -	- -	- -	4.42	0.66
Unpaved Road Dust	- -	- -	- -	0.60	0.06
Fugitive Windblown Dust	- -	- -	- -	0.65	0.11
Fires	0.02	0.40	0.01	0.04	0.03
Managed Burning and Disposal	0.02	0.18	0.02	0.03	0.03
Cooking	0.10	- -	- -	1.05	0.63
Other (Miscellaneous Processes)	0.08	0.08	0.00	0.06	0.04
Subtotal	**2.71**	**34.50**	**2.50**	**16.18**	**6.44**
On-Road Motor Vehicles					
Light Duty Vehicles	7.29	72.85	7.01	1.14	0.50
Medium Duty Trucks	1.57	19.28	2.63	0.22	0.10
Heavy Duty Trucks	1.40	9.82	12.01	0.47	0.34
Motorcycles	0.89	7.41	0.27	0.01	0.00
Buses	0.12	1.13	1.71	0.11	0.06
Motor Homes	0.02	0.58	0.16	0.01	0.00
Subtotal	**11.29**	**111.07**	**23.79**	**1.96**	**1.00**
Other Mobile Sources					
Aircraft	0.05	1.25	0.01	0.00	0.00
Trains	0.15	0.38	2.23	0.05	0.05
Ocean Going Vessels	0.08	0.16	1.70	0.06	0.06
Commercial Harbor Craft	0.08	0.40	1.11	0.05	0.04
Recreational Boats	2.46	7.70	0.45	0.14	0.11
Off-Road Recreational Vehicles	0.31	0.23	0.00	0.00	0.00
Off-Road Equipment	3.30	34.57	4.04	0.30	0.28
Farm Equipment	0.11	0.72	0.55	0.03	0.03
Fuel Storage and Handling	0.52	- -	- -	- -	- -
Subtotal	**7.06**	**45.41**	**10.09**	**0.63**	**0.57**
COUNTY TOTAL	**45.74**	**204.18**	**52.84**	**19.98**	**8.74**

Notes: 2012 is the latest inventory available from the California Air Resources Board (CARB).
All values are in tons per day. Dashes ("- -") indicate no data are available.
The sum of values may not equal total shown due to rounding.
Source: CARB website: http://arb.ca.gov

Table 7. Contra Costa County Emissions Forecast for 2035

Emission Category	Reactive Organic Gases	Carbon Monoxide	Nitrogen Oxides	Inhalable Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Fuel Combustion					
Electric Utilities	0.17	0.81	1.18	- -	- -
Cogeneration	0.17	2.68	2.12	- -	- -
Oil and Gas Production (Combustion)	0.00	0.00	0.02	- -	- -
Petroleum Refining (Combustion)	1.62	4.32	6.92	- -	- -
Manufacturing and Industrial	0.29	1.79	1.32	0.26	0.26
Food and Agricultural Processing	0.00	0.03	0.04	0.00	0.00
Service and Commercial	0.28	1.88	1.51	0.27	0.27
Other (Fuel Combustion)	0.02	0.07	0.25	0.00	0.00
Subtotal	**2.55**	**11.58**	**13.36**	**0.53**	**0.53**
Waste Disposal					
Sewage Treatment	0.07	0.01	0.14	- -	- -
Landfills	0.16	- -	0.00	- -	- -
Incinerators	0.19	0.15	0.15	- -	- -
Soil Remediation	0.00	- -	- -	- -	- -
Other (Waste Disposal)	0.00	- -	- -	- -	- -
Subtotal	**0.42**	**0.16**	**0.29**	**0.00**	**0.00**
Cleaning and Surface Coatings					
Laundering	0.01	- -	- -	- -	- -
Degreasing	0.27	- -	- -	- -	- -
Coatings and Related Process Solvents	0.96	0.00	0.00	- -	- -
Printing	0.47	0.00	0.01	- -	- -
Adhesives and Sealants	0.89	- -	- -	- -	- -
Other (Cleaning and Surface Coating)	0.00	- -	- -	- -	- -
Subtotal	**2.60**	**0.00**	**0.01**	**0.00**	**0.00**
Petroleum Production and Marketing					
Oil and Gas Production	0.04	- -	- -	- -	- -
Petroleum Refining	5.20	0.72	0.57	- -	- -
Petroleum Marketing	2.46	- -	- -	- -	- -
Other (Petroleum Production and Marketing)	0.00	- -	- -	- -	- -
Subtotal	**7.70**	**0.72**	**0.57**	**0.00**	**0.00**
Industrial Processes					
Chemical	2.38	0.23	0.15	0.00	0.00
Food and Agriculture	0.29	0.36	0.02	0.16	0.05
Mineral Processes	0.84	0.45	3.40	0.90	0.21
Metal Processes	0.06	0.04	0.12	0.01	0.01
Wood and Paper	- -	- -	0.00	0.00	0.00
Electronics	- -	- -	- -	- -	- -
Other (Industrial Processes)	3.47	1.20	0.22	- -	- -
Subtotal	**7.04**	**2.28**	**3.91**	**1.07**	**0.27**

Table 7. Contra Costa County Emissions Forecast for 2035 (Continued)

Emission Category	Reactive Organic Gases	Carbon Monoxide	Nitrogen Oxides	Inhalable Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Solvent Evaporation					
Consumer Products	5.59	- -	- -	- -	- -
Architectural Coatings & Related Process Solvents	2.60	- -	- -	- -	- -
Pesticides/Fertilizers	0.12	- -	- -	- -	- -
Asphalt Paving / Roofing	0.12	- -	- -	0.05	0.05
Subtotal	**8.43**	**- -**	**- -**	**0.05**	**0.05**
Miscellaneous Processes					
Residential Fuel Combustion	2.57	41.04	3.17	5.50	5.30
Farming Operations	0.38	- -	- -	0.23	0.03
Construction and Demolition	- -	- -	- -	4.89	0.49
Paved Road Dust	- -	- -	- -	4.70	0.70
Unpaved Road Dust	- -	- -	- -	0.59	0.06
Fugitive Windblown Dust	- -	- -	- -	0.53	0.09
Fires	0.03	0.42	0.01	0.04	0.04
Managed Burning and Disposal	0.02	0.16	0.02	0.03	0.03
Cooking	0.13	- -	- -	1.28	0.77
Other (Miscellaneous Processes)	0.08	0.08	0.00	0.06	0.04
Subtotal	**3.21**	**41.70**	**3.20**	**17.85**	**7.55**
On-Road Motor Vehicles					
Light Duty Vehicles	1.17	13.72	0.98	1.32	0.57
Medium Duty Trucks	0.73	5.36	0.49	0.24	0.10
Heavy Duty Trucks	0.69	4.77	3.82	0.32	0.18
Motorcycles	0.90	6.41	0.31	0.01	0.00
Buses	0.07	0.42	0.77	0.08	0.04
Motor Homes	0.00	0.02	0.06	0.01	0.00
Subtotal	**3.56**	**30.70**	**6.43**	**1.98**	**0.89**
Other Mobile Sources					
Aircraft	0.06	1.34	0.02	0.00	0.00
Trains	0.09	0.77	1.74	0.04	0.03
Ocean Going Vessels	0.10	0.19	1.06	0.06	0.05
Commercial Harbor Craft	0.08	0.59	0.64	0.02	0.02
Recreational Boats	1.22	9.89	0.45	0.07	0.05
Off-Road Recreational Vehicles	0.37	0.37	0.01	0.00	0.00
Off-Road Equipment	2.82	43.14	2.21	0.19	0.18
Farm Equipment	0.03	0.70	0.08	0.00	0.00
Fuel Storage and Handling	0.22	- -	- -	- -	- -
Subtotal	**4.99**	**56.99**	**6.21**	**0.38**	**0.33**
COUNTY TOTAL	**40.50**	**144.13**	**33.98**	**21.86**	**9.62**

Notes: 2035 is the furthest horizon year available from the California Air Resources Board (CARB).
All values are in tons per day. Dashes ("- -") indicate no data are available.
The sum of values may not equal total shown due to rounding.
Source: CARB website: http://arb.ca.gov

Table 8 presents estimates of GHG emissions generated in California during the years 2000 through 2017. The data are expressed as "million tonnes of CO_2 equivalent" per year. One tonne is sometimes referred to as a "metric ton" and is equal to 2,204.6 pounds.

While CO_2 is the most common component of GHG, several different compounds are components of overall GHG. The different compounds contribute to climate change with varying intensities. The term "CO_2 equivalent" (CO_2e) refers to a weighted composite of these several compounds, expressed as the equivalent amount of CO_2.

Table 8 presents estimates of GHG emissions disaggregated into the following six major source categories:

- Transportation,
- Industrial,
- Electric Power,
- Commercial and Residential,
- Agricultural, and
- High Global Warming Potential (GWP).

Each major source category is further disaggregated into minor source categories.

As shown in **Table 8**, Transportation, Industrial, and Electric Power are the three larger major source categories of GHG emissions in California. Commercial and Residential, Agricultural, and High GWP activities are relatively smaller sources of GHG emissions.

Table 9 presents forecasts of GHG emissions expected to be generated in California during the years 2009 through 2020.

Table 10 presents estimates of GHG emissions generated in Contra Costa County in years from 2005 to 2035. Stationary Sources, and Energy Use of Major Industrial Facilities are the categories that generate the largest amount of GHG emissions in Contra Costa County.

Table 8. California Greenhouse Gas Inventory for 2000 - 2017

CALIFORNIA AIR RESOURCES BOARD

California Greenhouse Gas Inventory for 2000-2017
— by Category as Defined in the 2008 Scoping Plan

million tonnes of CO2 equivalent - (based upon IPCC Fourth Assessment Report's 100-yr Global Warming Potentials)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Transportation	180.33	180.65	188.07	185.54	187.19	189.05	189.02	188.82	177.35	170.20	165.13	161.76	161.31	160.91	162.53	166.18	168.76	169.86
On Road	164.76	165.30	171.57	168.36	169.41	170.20	169.64	169.64	159.79	155.07	151.20	148.03	147.71	147.07	148.04	151.52	154.62	155.75
Passenger Vehicles	125.24	125.93	130.84	127.75	127.04	126.86	125.95	125.19	118.79	117.39	114.13	111.37	111.77	111.52	112.20	116.33	119.01	119.94
Heavy Duty Vehicles	39.51	39.37	40.73	40.61	42.37	43.33	43.68	44.45	41.00	37.68	37.07	36.65	35.93	35.55	35.83	35.19	35.61	35.81
Ships & Commercial Boats	4.86	4.75	5.14	5.38	5.46	5.79	5.93	6.02	5.78	5.25	3.66	3.52	3.43	3.42	3.49	3.42	3.24	3.32
Aviation (Intrastate)	4.21	4.02	4.17	4.25	4.49	4.49	4.56	4.97	4.50	4.03	3.84	3.73	3.75	3.93	3.90	4.22	4.44	4.68
Rail	1.88	1.89	2.50	2.86	2.91	3.34	3.53	3.17	2.38	1.95	2.31	2.64	2.47	2.40	2.63	2.42	2.17	1.83
Off Road [1]	2.63	2.79	2.77	2.84	3.03	3.22	3.32	3.18	2.82	2.25	2.03	2.13	2.23	2.33	2.43	2.53	2.63	2.73
Unspecified	1.98	1.90	1.93	1.85	1.89	2.01	2.05	1.84	2.09	1.66	2.09	1.72	1.71	1.77	2.04	2.07	1.66	1.54
Industrial	97.41	95.43	96.53	95.62	98.03	95.93	93.30	90.18	90.54	87.90	91.50	90.17	91.08	93.69	94.02	91.48	89.49	89.40
Refineries and Hydrogen Production	28.52	29.10	29.25	29.89	29.13	29.81	29.70	29.27	28.48	28.37	30.46	30.12	29.88	29.22	29.40	28.21	29.61	29.89
General Fuel Use	20.25	19.08	20.32	16.53	17.02	16.00	15.96	14.77	15.99	15.56	17.93	18.78	18.91	19.31	19.88	19.23	19.23	19.07
Natural Gas	16.82	14.62	15.18	11.97	12.80	12.72	12.38	11.56	12.37	11.46	13.46	14.50	14.48	14.37	15.57	14.79	15.28	15.28
Other Fuels	3.43	4.46	5.13	4.56	4.22	3.28	3.57	3.20	3.62	4.11	4.47	4.28	4.43	4.94	4.31	4.45	3.96	3.78
Oil & Gas: Production & Processing [2]	19.39	19.62	18.34	20.85	21.00	19.69	17.53	17.56	18.82	17.69	16.80	16.73	16.73	19.06	19.47	19.58	17.11	17.22
Fuel Use	17.53	17.76	16.51	19.03	19.20	17.91	15.75	15.78	17.05	15.92	15.01	14.91	14.87	16.94	17.18	17.22	14.84	14.94
Fugitive Emissions	1.87	1.86	1.84	1.82	1.80	1.78	1.77	1.77	1.78	1.77	1.80	1.82	1.86	2.12	2.29	2.36	2.27	2.28
Cement Plants	9.50	9.28	9.83	9.90	10.08	10.03	9.76	9.25	8.64	5.73	5.57	5.37	6.92	7.21	7.66	7.47	7.60	7.66
Clinker Production	5.52	5.28	5.82	5.87	6.03	5.96	5.81	5.66	5.28	3.60	3.46	3.70	4.22	4.47	4.78	4.69	4.67	4.85
Fuel Use	3.98	4.00	4.01	4.03	4.05	4.06	3.95	3.59	3.35	2.13	2.11	1.67	2.70	2.74	2.88	2.77	2.93	2.81
Cogeneration Heat Output	11.69	10.48	10.65	10.59	12.92	12.41	12.16	11.15	10.40	12.56	12.61	11.15	10.81	10.99	9.64	8.98	7.99	7.79
Other Fugitive and Process Emissions	8.05	7.87	8.13	7.85	7.89	8.00	8.20	8.19	8.21	7.98	8.13	8.02	7.81	7.90	7.98	8.01	7.95	7.78
Natural Gas Transmission & Distribution	3.52	3.58	3.90	3.66	3.73	3.76	3.90	3.87	3.95	3.98	3.94	3.92	3.88	3.82	3.87	3.94	3.99	4.01
Manufacturing	0.32	0.32	0.27	0.27	0.29	0.28	0.27	0.27	0.24	0.22	0.24	0.22	0.19	0.20	0.17	0.18	0.10	0.11
Wastewater Treatment	1.86	1.84	1.87	1.84	1.85	1.83	1.84	1.86	1.83	1.81	1.87	1.85	1.85	1.85	1.86	1.85	1.85	1.86
Other	2.35	2.14	2.09	2.08	2.02	2.12	2.19	2.20	2.19	1.96	2.08	2.02	1.90	2.03	2.08	2.04	2.01	1.80
Electric Power	104.84	122.00	108.64	112.61	115.20	107.85	104.53	113.93	120.14	101.37	90.34	87.97	95.52	89.40	88.46	83.82	68.59	62.39
In-State Generation	58.94	62.98	49.68	48.05	49.15	45.05	49.85	54.12	54.32	53.33	46.75	41.10	51.02	49.42	51.68	49.88	42.28	38.45
Natural Gas	50.92	55.46	42.17	40.92	42.40	38.11	43.07	47.12	48.02	46.08	40.59	35.81	45.76	45.61	46.38	45.11	38.25	34.88
Other Fuels	6.84	6.36	6.36	5.98	5.59	5.77	5.63	5.85	5.15	5.90	5.05	4.03	4.44	2.91	4.40	3.65	2.54	2.61
Fugitive and Process Emissions	1.17	1.16	1.15	1.15	1.16	1.16	1.15	1.16	1.14	1.35	1.10	1.25	0.82	0.90	0.90	1.13	1.48	0.95
Imported Electricity	45.90	59.02	58.96	64.56	66.04	62.80	54.68	59.81	65.82	48.04	43.59	46.87	44.50	39.98	36.79	33.93	26.32	23.94
Unspecified Imports	14.27	25.42	26.92	32.05	32.92	30.01	27.95	32.73	37.92	14.99	13.45	15.52	17.48	11.82	13.44	11.21	9.68	8.84
Specified Imports	31.64	33.59	32.04	32.51	33.13	32.79	26.73	27.08	27.90	33.05	30.14	31.35	27.02	28.15	23.35	22.72	16.64	15.10

Last Updated: Monday, August 12, 2019 *Page 1*

Table 8. California Greenhouse Gas Inventory for 2000 – 2017 (Continued)

CALIFORNIA AIR RESOURCES BOARD

California Greenhouse Gas Inventory for 2000-2017
— by Category as Defined in the 2008 Scoping Plan

million tonnes of CO2 equivalent - (based upon IPCC Fourth Assessment Report's 100-yr Global Warming Potentials)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Commercial and Residential	43.96	42.87	44.85	43.33	44.61	43.07	43.77	43.99	44.37	44.48	45.92	46.37	43.76	44.42	38.25	38.82	40.62	41.14
Residential Fuel Use	30.16	29.25	29.41	28.95	29.99	28.81	29.20	29.34	29.67	29.32	30.06	30.51	28.21	29.02	23.75	24.17	25.27	26.00
Natural Gas	27.98	27.38	27.49	26.62	27.33	25.93	26.55	26.68	26.62	26.26	26.99	27.51	25.76	26.53	21.58	21.90	22.80	23.62
Other Fuels	1.41	1.09	1.13	1.52	1.84	2.06	1.81	1.82	2.20	2.21	2.21	2.13	1.58	1.62	1.28	1.39	1.58	1.49
Fugitive Emissions	0.78	0.79	0.79	0.80	0.81	0.83	0.84	0.85	0.85	0.85	0.87	0.87	0.87	0.88	0.88	0.89	0.89	0.89
Commercial Fuel Use	11.47	11.31	13.11	12.84	12.70	12.55	12.83	12.82	12.99	12.89	13.58	13.71	13.41	13.30	12.52	12.67	13.14	13.02
Natural Gas	10.05	10.08	11.88	11.36	11.14	10.92	11.60	11.47	11.14	11.00	11.17	11.33	11.25	11.28	10.40	10.50	10.90	11.06
Other Fuels	1.42	1.22	1.23	1.48	1.55	1.64	1.24	1.36	1.85	1.88	2.41	2.38	2.16	2.02	2.12	2.16	2.24	1.95
Commercial Cogeneration Heat Output	1.09	1.05	1.06	0.26	0.62	0.40	0.42	0.49	0.37	0.92	0.92	0.78	0.76	0.70	0.57	0.55	0.77	0.68
Other Commercial and Residential	1.24	1.26	1.27	1.29	1.30	1.31	1.32	1.33	1.34	1.35	1.36	1.37	1.38	1.40	1.41	1.42	1.43	1.44
Agriculture	30.97	31.15	33.24	33.54	32.83	33.70	34.72	35.22	35.09	32.85	33.68	34.34	35.46	33.99	35.06	33.75	33.51	32.42
Livestock	19.12	19.40	20.64	21.08	20.30	20.93	21.28	23.54	23.55	22.85	23.41	23.26	23.89	22.92	23.24	22.66	22.57	22.68
Enteric Fermentation (Digestive Process)	9.86	9.76	10.39	10.47	10.25	10.55	10.60	11.71	11.46	11.10	11.55	11.40	11.52	11.22	11.28	10.95	10.93	11.05
Manure Management	9.26	9.64	10.25	10.60	10.04	10.39	10.68	11.82	12.09	11.75	11.86	11.86	12.38	11.71	11.96	11.70	11.64	11.62
Crop Growing & Harvesting	8.04	7.93	8.22	8.21	8.04	8.17	8.15	7.90	7.45	7.39	7.49	7.42	7.70	7.36	7.30	6.70	6.96	6.63
Fertilizers	6.25	6.23	6.40	6.38	6.22	6.24	6.18	5.96	5.84	5.73	5.79	5.71	5.94	5.63	5.67	5.24	5.34	5.14
Soil Preparation and Disturbances	1.71	1.63	1.75	1.76	1.75	1.86	1.90	1.87	1.53	1.59	1.63	1.63	1.68	1.65	1.56	1.38	1.54	1.40
Crop Residue Burning	0.08	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.09
General Fuel Use	3.81	3.82	4.38	4.25	4.50	4.60	5.30	3.78	4.09	2.61	2.77	3.65	3.88	3.71	4.51	4.40	3.97	3.11
Diesel	2.52	2.69	3.04	3.00	3.17	3.40	3.86	2.68	3.18	1.75	1.96	2.52	2.47	2.53	3.39	3.66	3.21	2.40
Natural Gas	0.98	0.75	0.94	0.85	0.82	0.70	0.88	0.79	0.75	0.69	0.65	0.66	0.70	0.69	0.63	0.64	0.72	0.67
Gasoline	0.31	0.38	0.40	0.40	0.50	0.50	0.55	0.31	0.16	0.16	0.16	0.48	0.71	0.49	0.49	0.10	0.04	0.05
Other Fuels	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
High GWP	6.28	6.64	7.08	7.76	8.49	9.26	10.11	10.83	11.65	12.29	13.52	14.53	15.54	16.75	17.73	18.60	19.26	19.99
Ozone Depleting Substance (ODS) Substitutes	5.57	6.01	6.52	7.20	7.95	8.75	9.64	10.43	11.27	11.96	13.20	14.21	15.25	16.38	17.42	18.32	19.00	19.64
Electricity Grid SF6 Losses [4]	0.51	0.49	0.44	0.42	0.40	0.37	0.33	0.29	0.30	0.27	0.24	0.24	0.24	0.29	0.17	0.14	0.10	0.18
Semiconductor Manufacturing [3]	0.20	0.14	0.12	0.14	0.14	0.14	0.14	0.10	0.08	0.06	0.08	0.08	0.06	0.08	0.14	0.14	0.16	0.17
Recycling and Waste	7.35	7.51	7.46	7.60	7.60	7.78	7.86	7.94	8.11	8.27	8.37	8.47	8.49	8.52	8.59	8.73	8.81	8.89
Landfills [3]	7.22	7.36	7.31	7.43	7.42	7.59	7.65	7.71	7.88	8.02	8.11	8.19	8.20	8.22	8.28	8.40	8.47	8.54
Composting	0.13	0.15	0.16	0.17	0.18	0.20	0.21	0.22	0.24	0.25	0.26	0.27	0.29	0.30	0.31	0.33	0.34	0.35
Included Inventory Emissions	471.14	486.25	485.88	486.00	493.94	486.65	483.32	490.90	487.25	457.35	448.46	443.61	451.16	447.69	444.65	441.37	429.04	424.10

[1] Includes equipment used in construction, mining, oil drilling, industrial and airport ground operations.
[2] Reflects emissions from combustion of natural gas, diesel, and lease fuel plus fugitive emissions.
[3] These categories are listed in the Industrial sector of ARB's GHG Emission Inventory sectors.
[4] This category is listed in the Electric Power sector of ARB's GHG Emission Inventory sectors.
[5] The exceptional Aliso Canyon natural gas leak event released 1.96 MMTCO2e of unanticipated emissions in calendar year 2015 and an additional 0.53 MMTCO2e in 2016. These emissions will be mitigated in the future according to legal settlement and are presented alongside but tracked separately from routine inventory emissions.

Last Updated: Monday, August 12, 2019 *Page 2*

Source: California Air Resources Board website http://www.arb.ca.gov

Table 9. California Greenhouse Gas Emissions Forecast (2009 – 2020)

(Mid Case) Forecast for Updated Scoping Plan - MMTCO2e (AR4)												
Scoping Plan Category	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Transportation	**171.5**	**170.6**	**168.4**	**172.7**	**174.4**	**176.4**	**178.1**	**179.7**	**181.4**	**182.8**	**183.9**	**185.3**
On Road	***158.6***	***157.5***	***155.1***	***159.2***	***160.5***	***162.1***	***163.4***	***164.6***	***165.9***	***166.9***	***167.6***	***168.7***
Passenger Vehicles	122.5	121.5	119.0	122.1	122.9	123.5	123.9	124.5	125.2	125.6	125.7	126.2
Heavy Duty Trucks	36.1	36.0	36.1	37.0	37.7	38.7	39.5	40.1	40.7	41.3	41.9	42.5
Ships & Commercial Boats	***3.7***	***3.7***	***3.8***	***4.0***	***4.0***	***4.2***	***4.3***	***4.5***	***4.7***	***4.8***	***5.0***	***5.1***
Aviation (Intrastate)	***4.0***	***3.8***	***3.7***	***3.9***	***4.0***	***4.1***	***4.2***	***4.3***	***4.3***	***4.4***	***4.5***	***4.6***
Rail	***1.9***	***2.3***	***2.5***	***2.3***	***2.4***	***2.5***	***2.5***	***2.6***	***2.6***	***2.7***	***2.7***	***2.8***
Off Road [1]	***2.2***	***2.0***	***2.1***	***2.2***	***2.3***	***2.4***	***2.5***	***2.6***	***2.7***	***2.8***	***2.9***	***3.0***
Unspecified	***1.1***	***1.2***	***1.1***	***1.1***	***1.1***	***1.1***	***1.1***	***1.1***	***1.1***	***1.1***	***1.1***	***1.1***
Electric Power	**103.6**	**90.1**	**86.6**	**93.4**	**94.6**	**95.9**	**97.2**	**98.6**	**99.8**	**100.9**	**102.3**	**103.8**
In-State Generation	***55.5***	***46.5***	***39.7***	***46.9***	***48.1***	***49.4***	***50.7***	***52.1***	***53.3***	***54.4***	***55.8***	***57.3***
Natural Gas	48.9	40.6	34.5	41.0	42.2	43.5	44.8	46.2	47.3	48.5	49.9	51.4
Other Fuels	5.3	4.8	3.9	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
Fugitive and Process Emissions	1.3	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Imported Electricity	***48.0***	***43.6***	***46.9***	***46.5***	***46.5***	***46.5***	***46.5***	***46.5***	***46.5***	***46.5***	***46.5***	***46.5***
Unspecified Imports	15.0	13.5	15.5	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
Specified Imports	33.1	30.1	31.3	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8
Commercial and Residential	**44.2**	**45.2**	**45.5**	**45.5**	**45.9**	**46.4**	**46.8**	**47.3**	**47.9**	**48.4**	**49.0**	**49.5**
Residential Fuel Use	***28.7***	***29.4***	***29.9***	***29.9***	***30.1***	***30.2***	***30.3***	***30.6***	***30.8***	***31.1***	***31.4***	***31.7***
Natural Gas	26.3	27.0	27.5	27.5	27.7	27.9	28.0	28.2	28.4	28.7	29.0	29.3
Other Fuels	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Commercial Fuel Use	***14.6***	***14.8***	***14.9***	***14.7***	***14.9***	***15.2***	***15.6***	***15.9***	***16.2***	***16.5***	***16.7***	***17.0***
Natural Gas	12.6	12.5	12.6	12.5	12.7	13.0	13.4	13.7	14.0	14.3	14.5	14.8
Other Fuels	2.0	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Commercial Cogeneration Heat Output	***0.9***	***0.9***	***0.8***	***0.9***	***0.9***	***0.9***	***0.9***	***0.9***	***0.9***	***0.9***	***0.9***	***0.9***
Industrial	**85.3**	**92.0**	**94.4**	**91.5**	**92.0**	**92.6**	**93.0**	**93.2**	**93.3**	**93.5**	**93.6**	**93.7**
Refineries	***28.3***	***30.4***	***30.1***	***29.7***	***29.7***	***29.7***	***29.7***	***29.7***	***29.7***	***29.7***	***29.7***	***29.7***
General Fuel Use	***17.6***	***20.2***	***21.6***	***21.2***	***21.7***	***22.1***	***22.4***	***22.7***	***23.0***	***23.3***	***23.6***	***23.9***
Natural Gas	11.5	13.5	14.5	14.6	15.0	15.4	15.7	16.0	16.3	16.6	16.9	17.2
Other Fuels	6.1	6.8	7.1	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
Oil & Gas Extraction [2]	***17.1***	***16.2***	***16.2***	***15.7***	***15.6***	***15.7***	***15.7***	***15.5***	***15.2***	***15.0***	***14.7***	***14.5***
Fuel Use	15.9	15.0	14.9	14.6	14.5	14.6	14.6	14.4	14.2	13.9	13.7	13.5
Fugitive Emissions	1.2	1.2	1.3	1.2	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.0
Cement Plants	***5.7***	***5.6***	***6.1***	***5.8***	***5.8***	***5.8***	***5.8***	***5.8***	***5.8***	***5.8***	***5.8***	***5.8***
Clinker Production	3.6	3.5	4.1	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Fuel Use	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Cogeneration Heat Output	***10.3***	***12.5***	***12.6***	***11.8***	***11.8***	***11.8***	***11.8***	***11.8***	***11.8***	***11.8***	***11.8***	***11.8***
Other Fugitive and Process Emissions	***6.3***	***7.2***	***7.7***	***7.2***	***7.3***	***7.4***	***7.5***	***7.7***	***7.8***	***7.9***	***8.0***	***8.1***
Recycling and Waste	**8.1**	**8.2**	**8.3**	**8.3**	**8.4**	**8.5**	**8.6**	**8.7**	**8.9**	**9.0**	**9.2**	**9.4**
Landfills [3]	***7.8***	***7.9***	***8.0***	***8.0***	***8.1***	***8.2***	***8.3***	***8.4***	***8.6***	***8.7***	***8.9***	***9.1***
Composting	***0.3***	***0.3***	***0.3***	***0.3***	***0.3***	***0.3***	***0.3***	***0.3***	***0.3***	***0.3***	***0.3***	***0.3***
High GWP	**14.1**	**16.1**	**17.3**	**19.1**	**20.6**	**22.2**	**23.7**	**25.3**	**26.9**	**28.5**	**30.1**	**31.5**
Ozone Depleting Substance (ODS) Substitutes	***13.5***	***15.4***	***16.6***	***18.4***	***20.0***	***21.5***	***23.1***	***24.7***	***26.3***	***27.9***	***29.4***	***30.9***
Electricity Grid SF6 Losses [4]	***0.3***	***0.2***	***0.2***	***0.2***	***0.2***	***0.2***	***0.2***	***0.2***	***0.2***	***0.2***	***0.2***	***0.2***
Semiconductor Manufacturing [3]	***0.3***	***0.5***	***0.4***	***0.4***	***0.4***	***0.4***	***0.4***	***0.4***	***0.4***	***0.4***	***0.4***	***0.4***
Agriculture	**35.0**	**34.9**	**35.4**	**34.8**	**34.9**	**35.0**	**35.1**	**35.2**	**35.4**	**35.6**	**35.8**	**36.2**
Livestock	***23.5***	***23.0***	***23.0***	***22.9***	***23.0***	***23.1***	***23.2***	***23.4***	***23.6***	***23.8***	***24.0***	***24.4***
Enteric Fermentation (Digestive Process)	11.3	11.1	11.1	11.1	11.1	11.2	11.2	11.3	11.4	11.4	11.5	11.7
Manure Management	12.2	11.8	11.9	11.8	11.9	11.9	12.0	12.1	12.2	12.3	12.5	12.7
Crop Growing & Harvesting	***8.8***	***9.1***	***8.8***	***8.9***	***8.9***	***8.9***	***8.9***	***8.9***	***8.9***	***8.9***	***8.9***	***8.9***
Fertilizers	7.3	7.6	7.2	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Soil Preparation and Disturbances	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Crop Residue Burning	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
General Fuel Use	***2.7***	***2.8***	***3.7***	***3.0***	***3.0***	***3.0***	***3.0***	***3.0***	***3.0***	***3.0***	***3.0***	***3.0***
Diesel	1.8	2.0	2.4	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Natural Gas	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Gasoline	0.2	0.2	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Other Fuels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL GROSS EMISSIONS	**461.8**	**457.0**	**455.9**	**465.4**	**470.8**	**476.9**	**482.4**	**488.0**	**493.5**	**498.7**	**503.9**	**509.4**
		2020 BAU Forecast Version: May 27, 2014										

Source: California Air Resources Board internet website http://www.arb.ca.gov
Note: Because of differences in methodology, values for 2009 through 2012 differ from the GHG emissions inventory values.

Source: California Air Resources Board website http://www.arb.ca.gov

Table 10. Greenhouse Gas Emissions in Contra Costa County by Sector by Year

Sector	2005	2013	2020	2035
Stationary Sources	13,983,030	11,873,500	- -	- -
Energy Use of Major Industrial Facilities	3,344,000	5,026,560	- -	- -
Residential Energy	274,690	258,420	282,930	292,500
Nonresidential Energy	118,740	125,350	137,150	144,810
Solid Waste	48,450	26,540	51,550	53,970
Landfill	193,950	196,500	204,560	218,560
On-Road Transportation	628,200	651,130	662,820	687,370
Off-Road Equipment	71,880	66,230	76,340	79,890
Water and Wastewater	8,080	7,400	8,600	9,000
BART	2,300	2,680	2,450	2,560
Agriculture	57,320	58,200	57,320	57,320
Subtotal Excluding Stationary Sources and Energy Use of Major Industrial Facilities	1,403,610	1,392,450	1,483,720	1,545,980
TOTAL	18,730,640	18,292,510	- -	- -

Source: County of Contra Costa 2015.
Notes: Dashes ("- -") indicate data are not available.
All values are metric tons of carbon dioxide equivalent per year (MT CO_2e / Yr)

3.6 REGULATORY SETTING

The following description of regulatory setting is based in part on material presented in the Bay Area Air Quality Management District (BAAQMD) document *California Environmental Quality Act Air Quality Guidelines* (Bay Area Air Quality Management District 2012).

Air quality within the SFBAAB is regulated by such agencies as the BAAQMD, ARB, and EPA. Each of these agencies develops rules, regulations, policies, and/or goals to attain the goals or directives imposed through legislation. Although the EPA regulations may not be superseded, both state and local regulations may be more stringent.

3.6.1 Federal Air Quality Regulations

At the federal level, EPA has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the Federal Clean Air Act (FCAA), which was enacted in 1963. The FCAA was amended in 1970, 1977, and 1990.

The FCAA required EPA to establish primary and secondary NAAQS, which are shown in **Table 2**. The FCAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The Federal Clean Air Act Amendments of 1990 (FCAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA has responsibility to review all state SIPs to determine conformation to the mandates of the FCAAA and determine if implementation will achieve air quality goals. If the EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area that imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated timeframe may result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

3.6.2 State Air Quality Regulations

ARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA), which was adopted in 1988. The CCAA requires that all air districts in the state endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that districts should focus particular attention on reducing the emissions from transportation and area-wide emission sources, and provides districts with the authority to regulate indirect sources.

ARB is primarily responsible for developing and implementing air pollution control plans to achieve and maintain the NAAQS. The ARB is primarily responsibility for statewide pollution sources and produces a major part of the SIP. Local air districts are still relied upon to provide additional strategies for sources under their jurisdiction. The ARB combines these data and submits the completed SIP to EPA.

Other ARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control and air quality management districts), establishing CAAQS (which in many cases are more stringent than the NAAQS), determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, and off-road vehicles.

In 1992 and 1993, the ARB requested delegation of authority for the implementation and enforcement of specified New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS) to the following local agencies: the BAAQMD and the South Coast Air Quality Management Districts (SCAQMD). EPA's review of the State of California's laws, rules, and regulations showed them to be adequate for the implementation and enforcement of these federal standards, and EPA granted the delegations as requested.

The California Clean Air Act, Section 39610 (a), directs the ARB to "identify each district in which transported air pollutants from upwind areas outside the district cause or contribute to a violation of the ozone standard and to identify the district of origin of transported pollutants." The information regarding the transport of air pollutants from one basin to another was to be quantified to assist interrelated basins in the preparation of plans for the attainment of State ambient air quality standards. Numerous studies conducted by the ARB have identified air basins that are impacted by pollutants transported from other air basins (as of 1993). Among the air basins affected by air pollution transport from the SFBAAB are the North Central Coast Air Basin, the Mountain Counties Air Basin, the San Joaquin Valley Air Basin, and the Sacramento Valley Air Basin. The SFBAAB was also identified as an area impacted by the transport of air pollutants from the Sacramento region.

3.6.3 Local Air Quality Regulations

The BAAQMD attains and maintains air quality conditions in the SFBAAB through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of the BAAQMD includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. The BAAQMD also inspects stationary sources of air pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the FCAA, FCAAA, and the CCAA.

California Environmental Quality Act Air Quality Guidelines. In 2009, 2011, 2012, and 2017, the BAAQMD released updates to its *California Environmental Quality Act Air Quality Guidelines* (Bay Area Air Quality Management District 2017b). This is an advisory document that provides the lead agency, consultants, and project applicants with uniform procedures for addressing air quality in environmental documents. The handbook contains the following applicable components:

1. criteria and thresholds for determining whether a project may have a significant adverse air quality impact;

2. specific procedures and modeling protocols for quantifying and analyzing air quality impacts;

3. methods available to mitigate air quality impacts; and

4. information for use in air quality assessments and environmental documents that will be updated more frequently such as air quality data, regulatory setting, climate, topography.

Air Quality Plans. As stated above, the BAAQMD prepares plans to attain ambient air quality standards in the SFBAAB. The BAAQMD prepares ozone attainment plans (OAP) for the national ozone standard and clean air plans (CAP) for the California standard both in coordination with the Metropolitan Transportation Commission and the Association of Bay Area Governments (ABAG).

With respect to applicable air quality plans, the BAAQMD prepared the *Spare the Air – Cool the Climate – A Blueprint for Clean Air and Climate Protection in the Bay Area – 2017 Final Clean Air Plan* (Bay Area Air Quality Management District 2017a). According to the BAAQMD (Bay Area Air Quality Management District 2020a):

> "The 2017 Plan provides a regional strategy to protect public health and protect the climate. To protect public health, the plan describes how the Air District will continue our progress toward attaining all state and federal air quality standards and eliminating health risk disparities from exposure to air pollution among Bay Area communities. To protect the climate, the plan defines a vision for transitioning the region to a post-carbon economy needed to achieve ambitious greenhouse gas reduction targets for 2030 and 2050, and provides a regional climate protection strategy that will put the Bay Area on a pathway to achieve those GHG reduction targets.
>
> "The 2017 Plan includes a wide range of control measures designed to decrease emissions of the air pollutants that are most harmful to Bay Area residents, such as particulate matter, ozone, and toxic air contaminants; to reduce emissions of methane and other 'super-GHGs' that are potent climate pollutants in the near-term; and to decrease emissions of carbon dioxide by reducing fossil fuel combustion."

3.6.4 Global Climate Change and Greenhouse Gas Emissions

Federal. The FCAA requires EPA to define NAAQS to protect public health and welfare in the U.S. The FCAA does not specifically regulate GHG emissions; however, on April 2, 2007 the U.S. Supreme Court in *Massachusetts v. U.S. Environmental Protection Agency*, determined that

GHGs are pollutants that can be regulated under the FCAA. Currently, there are no federal regulations that establish ambient air quality standards for GHGs.

On December 7, 2009, EPA adopted its Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA (Endangerment Finding). Under the Endangerment Finding, the Administrator of EPA found that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of § 202(a) of the FCAA. The Administrator of EPA also found that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. The findings do not in and of themselves impose any emission reduction requirements but, rather, allow EPA to finalize the GHG standards proposed earlier in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation. All mobile sources would be required to comply with these regulations as they are implemented.

State of California. The ARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California. There are currently no state regulations in California that establish ambient air quality standards for GHGs. However, California has passed laws directing ARB to develop actions to reduce GHG emissions, and several state legislative actions related to climate change and GHG emissions have been established.

Assembly Bill 1493. In 2002, then-Governor Gray Davis signed Assembly Bill (AB) 1493. AB 1493 requires that ARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by ARB to be vehicles whose primary use is noncommercial personal transportation in the State."

To meet the requirements of AB 1493, in 2004 ARB approved amendments to the California Code of Regulations (CCR) adding GHG emissions standards to California's existing standards for motor vehicle emissions. All mobile sources are required to comply with these regulations as they are phased in from 2009 through 2016.

Executive Order S-3-05. In 2005, in recognition of California's vulnerability to the effects of climate change, then-Governor Arnold Schwarzenegger established Executive Order S-3-05, which set forth a series of target dates by which statewide emissions of GHGs would be progressively reduced, as follows:

- by 2010, reduce GHG emissions to 2000 levels;
- by 2020, reduce GHG emissions to 1990 levels; and
- by 2050, reduce GHG emissions to 80 percent below 1990 levels.

Assembly Bill 32 – California Global Warming Solutions Act. In September 2006, then-Governor Arnold Schwarzenegger signed the California Global Warming Solutions Act (AB 32; California Health and Safety Code Division 25.5, §§ 38500 - 38599). AB 32 establishes regulatory, reporting, and market

mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished by enforcing a statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs ARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then ARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires ARB to adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrived at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state reduces GHG emissions enough to meet the cap. AB 32 also includes guidance on instituting emissions reductions in an economically efficient manner, along with conditions to ensure that businesses and consumers are not unfairly affected by the reductions. According to ARB's *Climate Change Scoping Plan* (California Air Resources Board 2009), the 2020 target of 427 million metric tons of CO_2e requires the reduction of 169 million metric tons of CO_2e, or approximately 28.3 percent, from the state's projected 2020 business-as-usual (BAU) emissions level of 596 million metric tons of CO_2e. However, ARB has discretionary authority to seek greater reductions in more significant and growing GHG sectors, such as transportation, as compared to other sectors that are not anticipated to significantly increase emissions. In August 2011, the Scoping Plan was re-approved by the Board and includes the *Final Supplement to the Scoping Plan Functional Equivalent Document* (California Air Resources Board 2011). This document includes expanded analysis of project alternatives as well as updates the 2020 emission projections. Considering the updated 2020 BAU estimate of 507 million metric tons of CO_2e, a 16 percent reduction below the estimated BAU levels would be necessary to return to 1990 levels by 2020. The document also excludes one measure identified in the Scoping Plan that has been adopted and one measure that is no longer under consideration by ARB (California Air Resources Board 2011).

<u>Executive Order S-1-07.</u> Executive Order S-1-07, which was signed by then-Governor Schwarzenegger in 2007, proclaims that the transportation sector is the main source of GHG emissions in California, generating more than 40 percent of statewide emissions. It established a goal to reduce the carbon intensity of transportation fuels sold in California by at least 10 percent by 2020. This order also directs ARB to determine whether this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32. On April 23, 2009 ARB approved the proposed regulation to implement the LCFS. The LCFS will reduce GHG emissions from the transportation sector in California by about 16 million metric tons in 2020.

Assembly Bill 32 Climate Change Scoping Plan and Updates. In December 2008, ARB adopted its *Climate Change Scoping Plan* (California Air Resources Board 2009), which contains the main strategies California will implement to achieve reduction of approximately 118 million metric tons of CO_2e emissions, or approximately 21.7 percent from the State's projected 2020 emission level of 545 million metric tons of CO_2e under a business-as-usual scenario (this is a reduction of 47 million metric tons of CO_2e, or almost 10 percent, from 2008 emissions).

In May 2014, ARB released and subsequently adopted the *First Update to the Climate Change Scoping Plan* (California Air Resources Board 2014) to identify the next steps in reaching AB 32 goals and evaluate progress made between 2000 and 2012. According to the update, California is on track to meet the near-term 2020 GHG limit and is well positioned to maintain and continue reductions beyond 2020. The update also reports the trends in GHG emissions from various emissions sectors (e.g., transportation, building energy, agriculture).

California's 2017 Climate Change Scoping Plan (2017 Scoping Plan Update) (California Air Resources Board 2017), lays out the framework for achieving the 2030 reductions as established in more recent legislation (discussed below). The 2017 Scoping Plan Update identifies the GHG reductions needed by each emissions sector to achieve a statewide emissions level that is 40 percent below 1990 levels before 2030. The update also identifies how GHGs associated with proposed projects could be evaluated under CEQA.

The 2017 Scoping Plan Update identified local governments as essential partners in achieving the State's long-term GHG reduction goals and recommended local actions to reduce GHG emissions. ARB recommends that local governments evaluate and adopt robust and quantitative locally appropriate goals that align with the statewide per capita targets and the State's sustainable development objectives and develop plans to achieve the local goals. For CEQA projects, ARB states that lead agencies have the discretion to develop evidence-based numeric thresholds consistent with the Scoping Plan and the State's long-term goals. To the degree a project relies on GHG mitigation measures, ARB recommends that lead agencies prioritize on-site design features that reduce emissions, especially from vehicle miles traveled (VMT), and direct investments in GHG reductions within the project's region that contribute potential air quality, health, and economic co-benefits. Where further project design or regional investments are infeasible or not proven to be effective, ARB recommends mitigating potential GHG impacts through purchasing and retiring carbon credits.

Executive Order B-30-15. On April 20, 2015 then-Governor Brown signed EO B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's executive order aligns California's GHG reduction targets with those of leading international governments such as the 28-nation European Union, which adopted the same target in October 2014. California is on track to

meet or exceed the target of reducing GHG emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (AB 32, discussed above). California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the ultimate goal of reducing emissions 80 percent below 1990 levels by 2050. This is in line with the scientifically established levels needed in the U.S. to limit global warming below 2 degrees Celsius, the warming threshold at which major climate disruptions are projected, such as super droughts and rising sea levels.

Senate Bill 32 and Assembly Bill 197 of 2016. In August 2016, then-Governor Brown signed SB 32 and AB 197, which serve to extend California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to authorize ARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the State's continuing efforts to pursue the long-term target expressed in Executive Orders S-3-05 and B-30-15 of 80 percent below 1990 emissions levels by 2050.

California Green Buildings Standards Code (CALGreen). The effective date of the 2019 Building Energy Efficiency Standards is January 2020. The standards apply to newly constructed buildings and additions and alterations to existing buildings. The standards are adopted into the California Code of Regulations (Title 24, Part 6). The building energy efficiency standards are designed to reduce wasteful, uneconomic, inefficient or unnecessary consumption of energy, and enhance outdoor and indoor environmental quality (California Energy Commission 2018).

Senate Bill 100: SB 100, the California Renewables Portfolio Standard Program, requires that all California utilities, including independently-owned utilities, energy service providers, and community choice aggregators, supply 44 percent of retail sales from renewable resources by December 31, 2024, 50 percent by December 31, 2026, 52 percent by December 31, 2027, and 60 percent by December 31, 2030. The law requires that eligible renewable energy resources and zero-carbon resources supply 100 percent of retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045.

California Low-Emission Vehicle Program. The ARB first adopted Low-Emission Vehicle (LEV) program standards in 1990. These first LEV standards ran from 1994 through 2003. LEV II regulations, running from 2004 through 2010, represent continuing progress in emission reductions. As the State's passenger vehicle fleet continues to grow and more sport utility vehicles and pickup trucks are used as passenger cars rather than work vehicles, the more stringent LEV II standards were adopted to provide reductions necessary for California to meet federally mandated clean air goals outlined in the 1994 State

Implementation Plan. In 2012, the ARB adopted the LEV III amendments to California's LEV regulations. These amendments, also known as the Advanced Clean Car Program include more stringent emission standards for model years 2017 through 2025 for both criteria pollutants and GHG emissions for new passenger vehicles.

In January 2013, EPA granted a request from the State of California for a waiver of preemption to enforce the Advanced Clean Car Program under the Clean Air Act. In August 2018, EPA proposed to withdraw this waiver of preemption. In November 2019, California and 22 other states filed suit to challenge the EPA proposed withdrawing of the waiver of preemption.

California On-Road Heavy-Duty Vehicle Program. The ARB has adopted standards for emissions from various types of new on-road heavy-duty vehicles. Section 1956.8, Title 13, California Code of Regulations contains California's emission standards for on-road heavy-duty engines and vehicles, and test procedures. The ARB has also adopted programs to reduce emissions from in-use heavy-duty vehicles including the Heavy-Duty Diesel Vehicle Idling Reduction Program, the Heavy-Duty Diesel In-Use Compliance Program, the Public Bus Fleet Rule and Engine Standards, and the School Bus Program and others.

California In-Use Off-Road Diesel Vehicle Regulation. On July 26, 2007, the ARB adopted a regulation to reduce diesel particulate matter (DPM) and NO_x emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations. The regulation limits idling to no more than five consecutive minutes, requires reporting and labeling, and requires disclosure of the regulation upon vehicle sale.

Performance requirements of the rule are based on a fleet's average NO_x emissions, which can be met by replacing older vehicles with newer, cleaner vehicles or by applying exhaust retrofits. The regulation was amended in 2010 to delay the original timeline of the performance requirements, making the first compliance deadline January 1, 2014 for large fleets (over 5,000 horsepower), 2017 for medium fleets (2,501-5,000 horsepower), and 2019 for small fleets (2,500 horsepower or less).

The latest amendments to the Truck and Bus regulation became effective on December 31, 2014. The amended regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Newer heavier trucks and buses must meet particulate matter filter requirements beginning January 1, 2012. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent.

The regulation applies to nearly all privately and federally-owned diesel-fueled trucks and buses and to privately and publicly owned school buses with a gross

> vehicle weight rating (GVWR) greater than 14,000 pounds. The regulation provides a variety of flexibility options tailored to fleets operating low use vehicles, fleets operating in selected vocations like agricultural and construction, and small fleets of three or fewer trucks.

Bay Area Air Quality Management District 2017 Clean Air Plan. The BAAQMD prepared and adopted the *Spare the Air – Cool the Climate – A Blueprint for Clean Air and Climate Protection in the Bay Area – 2017 Final Clean Air Plan* (Bay Area Air Quality Management District 2017a). According to the BAAQMD (Bay Area Air Quality Management District 2020a), the 2017 Clean Air Plan,

> ". . . focuses on two closely-related goals: protecting public health and protecting the climate. Consistent with the GHG reduction targets adopted by the state of California, the plan lays the groundwork for a longterm effort to reduce Bay Area GHG emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050."

Contra Costa County General Plan. The Contra Costa County General Plan Conservation Element contains an air quality resources discussion (Section 8.14) that identifies general goals and policies designed to address air pollution. The goals and policies tend to focus on improvements to the transportation system, reducing long distance commuting, encouraging and supporting non-auto transportation, and reducing future land use conflicts related to air pollution (Contra Costa County 2010). While Section 8.14 is geared toward criteria pollutants, such as ozone and particulate matter, implementation of the stated goals and policies also benefit efforts to reduce GHG emissions.

Contra Costa County Climate Action Planning. In May 2005, the Contra Costa County Board of Supervisors convened department heads in a Climate Change Working Group (CCWG) to identify existing County activities and policies that could potentially reduce GHG emissions. The CCWG is comprised of the Agricultural Commissioner, the Director of Conservation and Development and the Deputy Director of the Building Inspection Division, General Services, Health Services, and Public Works. In February 2007, the Board of Supervisors approved a resolution to join Local Governments for Sustainability and to conduct a GHG emissions inventory of Contra Costa County's countywide and municipal emissions. In December 2008, the Contra Costa County *Municipal Climate Action Plan* was adopted specifically for the County's municipal operations.

The County Department of Conservation and Development completed and released a *Draft Climate Action Plan* for public review and comment in December 2012. The *Climate Action Plan* was finalized and adopted by the Contra Costa County Board of Supervisors on December 15, 2015. This *Climate Action Plan* identifies specific measures on how the County can achieve a GHG reduction target of 15 percent below baseline levels by the year 2020.

3.7 CLIMATE, TOPOGRAPHY, AIR POLLUTION POTENTIAL

The following description of climate, topography and air pollution potential is based on material presented in the BAAQMD document *California Environmental Quality Act Air Quality Guidelines* (Bay Area Air Quality Management District 2012).

The SFBAAB comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, the southern portion of Sonoma, and the southwestern portion of Solano County. Air quality in this area is determined by such natural factors as topography, meteorology, and climate, in addition to the presence of existing air pollution sources and ambient conditions.

3.7.1 Climate

The climate is dominated by the strength and location of a semi-permanent, subtropical high-pressure cell. During the summer, the Pacific high pressure cell is centered over the northeastern Pacific Ocean resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below to the surface because of the northwesterly flow produces a band of cold water off the California coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the presence of the cold water band resulting in condensation and the presence of fog and stratus clouds along the Northern California coast.

In the winter, the Pacific high-pressure cell weakens and shifts southward resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in a low air pollution potential.

High Pressure Cell. During the summer, the large-scale meteorological condition that dominates the West Coast is a semi-permanent high pressure cell centered over the northeastern Pacific Ocean. This high pressure cell keeps storms from affecting the California coast. Hence, the SFBAAB experiences little precipitation in the summer months. Winds tend to blow on shore out of the north/northwest.

The steady northwesterly flow induces upwelling of cold water from below. This upwelling produces a band of cold water off the California coast. When air approaches the California coast, already cool and moisture-laden from its long journey over the Pacific, it is further cooled as it crosses this bank of cold water. This cooling often produces condensation resulting in a high incidence of fog and stratus clouds along the Northern California coast in the summer.

Generally in the winter, the Pacific high weakens and shifts southward, winds tend to flow offshore, upwelling ceases and storms occur. During the winter rainy periods, inversions (layers of warmer air over colder air; see below) are weak or nonexistent, winds are usually moderate and air pollution potential is low. The Pacific high does periodically become dominant, bringing strong inversions, light winds and high pollution potential.

3.7.2 Topography

The SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, which distort normal wind flow patterns. The Coast Range splits resulting in a western coast gap, Golden Gate, and an eastern coast gap, Carquinez Strait, which allow air to flow in and out of the SFBAAB and the Central Valley.

This complex terrain, especially the higher elevations, distorts the normal wind flow patterns in the SFBAAB. The greatest distortion occur when low-level inversions are present and the air beneath the inversion flows independently of air above the inversion, a condition that is common in the summer time.

The only major break in California's Coast Range occurs in the SFBAAB. Here the Coast Range splits into western and eastern ranges. Between the two ranges lies San Francisco Bay. The gap in the western coast range is known as the Golden Gate, and the gap in the eastern coast range is the Carquinez Strait. These gaps allow air to pass into and out of the SFBAAB and the Central Valley.

3.7.3 Wind, Temperature, and Precipitation

Wind Patterns. During the summer, winds flowing from the northwest are drawn inland through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately south of Mount Tamalpais, the northwesterly winds accelerate considerably and come more directly from the west as they stream through the Golden Gate. This channeling of wind through the Golden Gate produces a jet that sweeps eastward and splits off to the northwest toward Richmond and to the southwest toward San Jose when it meets the East Bay hills.

Wind speeds may be strong locally in areas where air is channeled through a narrow opening, such as the Carquinez Strait, the Golden Gate or the San Bruno gap. For example, the average wind speed at San Francisco International Airport in July is about 17 knots (from 3 p.m. to 4 p.m.), compared with only seven knots at San Jose and less than six knots at the Farallon Islands.

The air flowing in from the coast to the Central Valley, called the sea breeze, begins developing at or near ground level along the coast in late morning or early afternoon. As the day progresses, the sea breeze layer deepens and increases in velocity while spreading inland. The depth of the sea breeze depends in large part upon the height and strength of the inversion. If the inversion is low and strong, and hence stable, the flow of the sea breeze will be inhibited and stagnant conditions are likely to result.

In the winter, the SFBAAB frequently experiences stormy conditions with moderate to strong winds, as well as periods of stagnation with very light winds. Winter stagnation episodes are characterized by nighttime drainage flows in coastal valleys. Drainage is a reversal of the usual daytime air-flow patterns; air moves from the Central Valley toward the coast and back down toward the Bay from the smaller valleys within the SFBAAB.

Temperature. Summertime temperatures in the SFBAAB are determined in large part by the effect of differential heating between land and water surfaces. Because land tends to heat up and cool off more quickly than water, a large-scale gradient (differential) in temperature is often created between the coast and the Central Valley, and small-scale local gradients are often produced along the shorelines of the ocean and bays. The temperature gradient near the ocean is also exaggerated, especially in summer, because of the upwelling of cold ocean bottom water along the coast. On summer afternoons the temperatures at the coast can be 35 degrees Fahrenheit (ºF) cooler than temperatures 15 to 20 miles inland. At night this contrast usually decreases to less than 10ºF.

In the winter, the relationship of minimum and maximum temperatures is reversed. During the daytime the temperature contrast between the coast and inland areas is small, whereas at night the variation in temperature is large.

Precipitation. The SFBAAB is characterized by moderately wet winters and dry summers. Winter rains account for about 75 percent of the average annual rainfall. The amount of annual precipitation can vary greatly from one part of the SFBAAB to another even within short distances. In general, total annual rainfall can reach 40 inches in the mountains, but it is often less than 16 inches in sheltered valleys.

During rainy periods, ventilation (rapid horizontal movement of air and injection of cleaner air) and vertical mixing are usually high, and thus pollution levels tend to be low. However, frequent dry periods do occur during the winter where mixing and ventilation are low and pollutant levels build up.

3.7.4 Air Pollution Potential

The potential for high pollutant concentrations developing at a given location depends upon the quantity of pollutants emitted into the atmosphere in the surrounding area or upwind, and the ability of the atmosphere to disperse the contaminated air. The topographic and climatological factors discussed above influence the atmospheric pollution potential of an area. Atmospheric pollution potential, as the term is used here, is independent of the location of emission sources and is instead a function of factors described below.

Wind Circulation. Low wind speed contributes to the buildup of air pollution because it allows more pollutants to be emitted into the air mass per unit of time. Light winds occur most frequently during periods of low sun (fall and winter, and early morning) and at night. These are also periods when air pollutant emissions from some sources are at their peak, namely, commute traffic (early morning) and wood burning appliances (nighttime). The problem can be compounded in valleys, when weak flows carry the pollutants upvalley during the day, and cold air drainage flows move the air mass downvalley at night. Such restricted movement of trapped air provides little opportunity for ventilation and leads to buildup of pollutants to potentially unhealthful levels.

Inversions. An inversion is a layer of warmer air over a layer of cooler air. Inversions affect air quality conditions significantly because they influence the mixing depth (i.e., the vertical depth in the atmosphere available for diluting air contaminants near the ground). The highest air pollutant concentrations in the SFBAAB generally occur during inversions.

There are two types of inversions that occur regularly in the SFBAAB. One is more common in the summer and fall, while the other is most common during the winter. The frequent occurrence of elevated temperature inversions in summer and fall months acts to cap the mixing depth, limiting the depth of air available for dilution. Elevated inversions are caused by subsiding air from the subtropical high pressure zone, and from the cool marine air layer that is drawn into the SFBAAB by the heated low pressure region in the Central Valley.

The inversions typical of winter, called radiation inversions, are formed as heat quickly radiates from the earth's surface after sunset, causing the air in contact with it to rapidly cool. Radiation inversions are strongest on clear, low-wind, cold winter nights, allowing the build-up of such pollutants as CO and particulate matter. When wind speeds are low, there is little mechanical turbulence to mix the air, resulting in a layer of warm air over a layer of cooler air next to the ground. Mixing depths under these conditions can be as shallow as 50 to 100 meters, particularly in rural areas. Urban areas usually have deeper minimum mixing layers because of heat island effects and increased surface roughness. During radiation inversions downwind transport is slow, the mixing depths are shallow, and turbulence is minimal, all factors which contribute to ozone formation.

Although each type of inversion is most common during a specific season, either inversion mechanism can occur at any time of the year. Sometimes both occur simultaneously. Moreover, the characteristics of an inversion often change throughout the course of a day. The terrain of the SFBAAB also induces significant variations among subregions.

Solar Radiation. The frequency of hot, sunny days during the summer months in the SFBAAB is another important factor that affects air pollution potential. It is at the higher temperatures that ozone is formed. In the presence of ultraviolet sunlight and warm temperatures, ROG and NO_x react to form secondary photochemical pollutants, including ozone.

Because temperatures in many of the SFBAAB inland valleys are so much higher than near the coast, the inland areas are especially prone to photochemical air pollution.

In late fall and winter, solar angles are low, resulting in insufficient ultraviolet light and warming of the atmosphere to drive the photochemical reactions. Ozone concentrations do not reach significant levels in the SFBAAB during these seasons.

Sheltered Terrain. The hills and mountains in the SFBAAB contribute to the high pollution potential of some areas. During the day, or at night during windy conditions, areas in the lee sides of mountains are sheltered from the prevailing winds, thereby reducing turbulence and downwind transport. At night, when wind speeds are low, the upper atmospheric layers are often decoupled from the surface layers during radiation conditions. If elevated terrain is present, it

will tend to block pollutant transport in that direction. Elevated terrain also can create a recirculation pattern by inducing upvalley air flows during the day and reverse downvalley flows during the night, allowing little inflow of fresh air.

The areas having the highest air pollution potential tend to be those that experience the highest temperatures in the summer and the lowest temperatures in the winter. The coastal areas are exposed to the prevailing marine air, creating cooler temperatures in the summer, warmer temperatures in winter, and stratus clouds all year. The inland valleys are sheltered from the marine air and experience hotter summers and colder winters. Thus, the topography of the inland valleys creates conditions conducive to high air pollution potential.

Pollution Potential Related to Emissions. Although air pollution potential is strongly influenced by climate and topography, the air pollution that occurs in a location also depends upon the amount of air pollutant emissions in the surrounding area or transported from more distant places. Air pollutant emissions generally are highest in areas that have high population densities, high motor vehicle use and/or industrialization. These contaminants created by photochemical processes in the atmosphere, such as ozone, may result in high concentrations many miles downwind from the sources of their precursor chemicals.

3.7.5 Northern Alameda and Western Contra Costa Counties Subregion

This section discusses the varying climatological and topographic conditions, and the resulting variations in air pollution potential, within the Northern Alameda and Western Contra Costa Counties subregion.

This climatological subregion stretches from Richmond to San Leandro. Its western boundary is defined by the Bay and its eastern boundary by the Oakland-Berkeley Hills. The Oakland-Berkeley Hills have a ridge line height of approximately 1,500 feet, a significant barrier to air flow. The most densely populated area of the subregion lies in a strip of land between the Bay and the lower hills.

In this area, marine air traveling through the Golden Gate, as well as across San Francisco and through the San Bruno Gap, is a dominant weather factor. The Oakland-Berkeley Hills cause the westerly flow of air to split off to the north and south of Oakland, which causes diminished wind speeds. The prevailing winds for most of this subregion are from the west. At the northern end, near Richmond, prevailing winds are from the south-southwest.

Temperatures in this subregion have a narrow range due to the proximity of the moderating marine air. Maximum temperatures during summer average in the mid-70's, with minimums in the mid-50's. Winter highs are in the mid- to high-50's, with lows in the low- to mid-40's.

The air pollution potential is lowest for the parts of the subregion that are closest to the Bay, due largely to good ventilation and less influx of pollutants from upwind sources. The occurrence of light winds in the evenings and early mornings occasionally causes elevated pollutant levels.

The air pollution potential at the northern (Richmond) and southern (Oakland, San Leandro) parts of this subregion is marginally higher than communities directly east of the Golden Gate, because of the lower frequency of strong winds.

This subregion contains a variety of industrial air pollution sources. Some industries are quite close to residential areas. The subregion is also traversed by frequently congested major freeways. Traffic and congestion, and the motor vehicle emissions they generate, are increasing.

SECTION 4
SHORT-TERM CONSTRUCTION IMPACTS

Implementation of the North Richmond Warehouse Project would result in construction activity, which would generate air pollutant emissions. Construction activities such as grading, excavation and travel on unpaved surfaces would generate dust, and can lead to elevated concentrations of PM_{10} and $PM_{2.5}$. The operation of construction equipment results in exhaust emissions, which include ROG and NO_x.

4.1 SIGNIFICANCE THRESHOLDS

The following describes significance thresholds applied in this *Air Quality Study*. In addition to describing significance thresholds applied in the analysis of short-term construction-related emissions, the following also describes significance thresholds applied in the analysis of long-term operational emissions. As a result, the descriptions of significance thresholds presented in Section 5, *Long-Term Operational Impacts* of this *Air Quality Study* and in Section 8, *Global Climate Change and Greenhouse Gas Impacts* refer back to the following description.

4.1.1 Litigation

On June 2, 2010, the BAAQMD Board of Directors adopted a set of CEQA thresholds of significance (Bay Area Air Quality Management District 2010). The thresholds of significance were included in a May 2011 update of the district CEQA guidelines, *California Environmental Quality Act Air Quality Guidelines – Updated May 2011* (Bay Area Air Quality Management District 2011).

On March 5, 2012 the Alameda Superior Court issued a judgment finding the BAAQMD had failed to comply with CEQA when it adopted the June 2010 thresholds. The court did not determine whether the thresholds were valid on the merits, but found that the adoption of the thresholds was a project under CEQA. The court issued a writ of mandate ordering the District to set aside the thresholds and cease dissemination of them until the District had complied with CEQA. The BAAQMD appealed the Alameda County Superior Court's decision in the California First District Court of Appeal.

On August 13, 2013, the California First District Court of Appeal overturned the March 5, 2012 decision by the Alameda Superior Court. On a subsequent appeal, the California Supreme Court upheld the thresholds. (Bay Area Air Quality Management District 2020)

The BAAQMD published a new version of the CEQA guidelines in May 2017 (Bay Area Air Quality Management District 2017) which includes CEQA thresholds of significance. This *Air Quality Study* uses the May 2017 thresholds.

4.1.2 Thresholds

The SFBAAB is currently designated as a nonattainment area for ozone and particulate matter air quality standards. The BAAQMD May 2017 significance thresholds include values for ozone precursors and particulate matter. These thresholds are presented in **Table 11**. The Proposed Project would be considered to result in a significant air quality impact if it would result in emissions greater than the values shown in **Table 11**.

As shown in **Table 11**, implementation of "Best Management Practices" is considered to reduce the impact of construction-related fugitive dust particulate matter emissions to a less-than-significant level. The following Best Management Practices measures are from Table 8-2 of the *California Environmental Quality Act Air Quality Guidelines – May 2017*:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 mph.

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer‘s specifications. All equipment shall be checked by a certified visible emissions evaluator.

8. Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District‘s phone number shall also be visible to ensure compliance with applicable regulations.

Implementation of these Best Management Practices measures is considered to reduce construction-related fugitive dust particulate matter air quality impacts to a less than significant level.

4.2 METHODOLOGY

The following is a description of methods used in the analysis presented in this *Air Quality Study*.

4.2.1 CalEEMod

Short-term construction-related and long-term operational emissions associated with the project were estimated using the CalEEMod emissions modeling program (California Air Pollution Control Officers Association 2016). CalEEMod is a land use emissions computer model designed to provide a platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operation of a variety of land use projects. The model quantifies direct emissions from construction and operation (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use.

More detailed information on the CalEEMod model is available at the internet website http://caleemod.com/. Output files from the CalEEMod model, as applied to the North Richmond Warehouse Project, are presented in the technical appendix of this *Air Quality Study*.

The CalEEMod emissions model contains default data characterizing the construction and operation of land use development projects, such as the North Richmond Warehouse Project. The CalEEMod default values were used except where:

- project-specific data are available,
- data specific to the BAAQMD are available, and
- updated technical data are available.

Project-specific data included the size of the project site and the construction schedule (Anderson pers. comm.). At the time the analysis for this *Air Quality Study* commenced, construction of the project was assumed to begin in early 2021 and be completed in early 2022. These data also included estimated project trip generation and trip length (Fehr & Peers 2020).

Data specific to the BAAQMD included use of architectural coatings with 100 grams per liter (g/l) volatile organic compound (VOC) content, consistent with BAAQMD Regulation 8 Rule 3.

Updated technical data included use of CO_2e energy intensity factors (Pacific Gas & Electric 2015).

Table 11. Bay Area Air Quality Management District Significance Thresholds

Type and Source of Emissions	Construction-Related Average Daily Emissions (in lbs/day)	Operational-Related	
		Average Daily Emissions (in lbs/day)	Maximum Annual Emissions (in tpy)
Reactive Organic Gas (ROG)	54	54	10
Nitrogen Oxides (NO_x)	54	54	10
Inhalable Particulate Matter (PM_{10})	82 (Exhaust Only)	82	15
Fine Particulate Matter ($PM_{2.5}$)	54 (Exhaust Only)	54	10
PM_{10} / $PM_{2.5}$ (Fugitive Dust)	Best Management Practices	None	None
Greenhouse Gases (GHG) (Projects other than stationary sources)	None	Compliance with Qualified Greenhouse Gas Reduction Strategy, or 1,100 MT of CO_2e/yr, or 4.6 MT CO_2e/SP/yr (residents + employees)	

Notes: lbs/day = pounds per day. tpy = tons per year. MT = metric tons.
CO_2e/yr = carbon dioxide equivalent per year.
CO_2e/SP/yr = carbon dioxide equivalent per service population per year.
Source: Bay Area Air Quality Management District 2017b.

4.2.2 EMFAC2017

The CalEEMod emissions modeling program described above includes motor vehicle emission rate data for default vehicle fleets. The CalEEMod data are applicable for the default background vehicle fleet. This default vehicle fleet includes a mix of:

- gasoline-powered vehicles,
- diesel-powered vehicles, and
- ZEV.

The CalEEMod default vehicle fleet also includes a mix of vehicle model years. The percentage mix of gasoline, diesel and ZEV, and the percentage mix of vehicle model years in the default fleet are based on measurements of the existing on-road vehicle fleet and forecasts of future changes in the fleet.

As shown in **Table 1**, scenarios analyzed for this *Air Quality Study* include non-default vehicle fleet compositions. For example, Scenario 1, Scenario 2, and Scenario 3 include:

- ZEV delivery vehicles in some analysis years,
- 2014 model year or later heavy-duty trucks in some analysis years, and
- ZEV heavy-duty trucks in other analysis years.

The ARB motor vehicle emission rate software program EMFAC2017 (California Air Resources Board 2020b) was used to develop emission rates for ZEV and for heavy-duty trucks with model years 2014 or later. Detailed information on the EMFAC2017 emission rate model is available at the ARB internet website for *MSEI - On-Road Documentation*, (https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-road-documentation). Output files from the EMFAC2017 model, as applied to the North Richmond Warehouse Project, are presented in the technical appendix of this *Air Quality Study*.

ZEV emission rates calculated by EMFAC2017 do not include exhaust and evaporative emissions. However, EMFAC2017 emission rates for ZEV do include particulate emissions associated with tire wear and brake wear. As a result, particulate emissions associated with tire wear and brake wear from ZEV are included in the analysis for this *Air Quality Study*.

4.3 IMPACTS

The following is a description of construction-related impacts of the North Richmond Warehouse Project on criteria pollutant emissions.

Implementation of the Proposed Project would result in construction activity, which would generate air pollutant emissions. Construction activities such as demolition, grading, excavation and travel on unpaved surfaces would generate dust, and can lead to elevated concentrations of particulate matter emissions PM_{10} and $PM_{2.5}$. The operation of construction equipment results in exhaust emissions, which include ozone precursors ROG and NO_x.

Table 12 presents construction-period emissions that would result from implementation of the North Richmond Warehouse Project.

4.3.1 Reactive Organic Gas Emissions

As shown in **Table 12**, construction of the Proposed Project would result in 187.65 pounds per day (ppd) of ROG emissions. During the construction period, the highest levels of ROG emissions would occur during the application of architectural coatings. The generation of 187.65 ppd of ROG would be greater than the BAAQMD significance threshold of 54 ppd. Therefore, according to methods described in the *Significance Thresholds* section of the *Air Quality Study*, this impact is considered significant. Implementation of the following mitigation measure would reduce this impact to a less than significant level.

Mitigation Measure AQ-1: Use Low-VOC Architectural Coatings. During project construction, use architectural coating with a low VOC content. The project-wide average VOC content shall be 28 g/l or less.

As shown in **Table 12**, implementation of this mitigation measure would reduce construction-related ROG emissions to 52.98 ppd, which would be less than the BAAQMD significance threshold of 54 ppd and reduce this impact to a less than significant level.

4.3.2 Nitrogen Oxide Emissions

As shown in **Table 12**, construction of the Proposed Project would result in 92.85 ppd of NO_x emissions. Construction-related NO_x emissions would be greater than the BAAQMD 54 ppd significance threshold for construction-related NO_x emissions. Therefore, according to methods described in the *Significance Thresholds* section of the *Air Quality Study*, this impact is considered significant. Implementation of the following mitigation measure would reduce this impact to a less than significant level.

Mitigation Measure AQ-2: Use Tier 4 Construction Equipment. During the demolition, site preparation, and grading phases of project construction, diesel-powered equipment that complies with Tier 4 Final emission standards shall be used, except for specialized equipment in which engines that comply with Tier 4 standards are not available. In place of Tier 4 engines, off-road construction equipment can incorporate retrofits such that NO_x emission reductions achieved equal or exceed reductions from engines that comply with Tier 4 standards.

As shown in **Table 12**, implementation of this mitigation measure would reduce construction-related NO_x emissions to 38.89 ppd, which would be less than the BAAQMD significance threshold of 54 ppd and reduce this impact to a less than significant level.

Table 12. Construction-Period Emissions

Category	Criteria Pollutant Emissions (Pounds per Day)			
	ROG	NO_x	PM_{10} (Exhaust Only)	$PM_{2.5}$ (Exhaust Only)
Before Mitigation Measures				
Amount of Emissions	187.65	92.85	4.09	3.76
Significant Impact?	Yes	Yes	No	No
With Mitigation Measures				
Amount of Emissions	52.98	38.89	1.40	1.33
Significant Impact?	No	No	No	No
BAAQMD Significance Thresholds	54	54	82	54

Notes: Highest of winter and summer values are shown.
ROG = reactive organic gases. NO_x = nitrogen oxides.
PM_{10} = inhalable particulate matter. $PM_{2.5}$ = fine particulate matter.
BAAQMD = Bay Area Air Quality Management District.

4.3.3 Inhalable Particulate Matter (PM_{10}) - Exhaust Emissions

As shown in **Table 12**, construction of the Proposed Project would result in 4.09 ppd of PM_{10} exhaust emissions. Construction-period PM_{10} exhaust emissions would be less than the BAAQMD 82 ppd significance threshold. Therefore, according to methods described in the *Significance Thresholds* section of the *Air Quality Study*, this impact is considered less than significant, and no mitigation measures are required.

4.3.4 Fine Particulate Matter ($PM_{2.5}$) - Exhaust Emissions

As shown in **Table 12**, construction of the Proposed Project would result in 3.76 ppd of $PM_{2.5}$haust emissions. Construction-period $PM_{2.5}$ exhaust emissions would be less than the BAAQMD 54 ppd significance threshold. Therefore, according to methods described in the *Significance Thresholds* section of the *Air Quality Study*, this impact is considered less than significant, and no mitigation measures are required.

4.3.5 Particulate Matter – Fugitive Dust Emissions

As shown in **Table 11**, PM_{10} and $PM_{2.5}$ fugitive dust emissions would be reduced to less-than-significant levels with implementation of Best Management Practices. Therefore, according to methods described in the *Significance Thresholds* section of the *Air Quality Study*, implementation of the following mitigation measure will reduce construction-related PM_{10} and $PM_{2.5}$ fugitive dust emissions to a less-than-significant level:

Mitigation Measure AQ-3: Apply Construction Period Best Management Practices. During construction of the Proposed Project, the following mitigation measures shall be implemented:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 mph.

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California

Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer‘s specifications. All equipment shall be checked by a certified visible emissions evaluator.

8. Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District‘s phone number shall also be visible to ensure compliance with applicable regulations.

Implementation of this mitigation measure will reduce construction-period particulate matter fugitive dust impacts to a less than significant level.

SECTION 5
LONG-TERM OPERATIONAL IMPACTS

This section of this *Air Quality Study* assesses the long-term operational impact of project-related emissions on air quality.

5.1 SIGNIFICANCE THRESHOLDS

Section 4.1, *Significance Thresholds*, of this *Air Quality Study*, describes significance thresholds recommended by the BAAQMD and applied in this study to both construction-related and operational criteria pollutant emissions.

5.2 METHODOLOGY

As described in more detail in section 4.2 of this *Air Quality Study*, *Methodology*, long-term operational emissions associated with the project were estimated using the CalEEMod emissions modeling program (California Air Pollution Control Officers Association 2016) and the EMFAC2017 mobile source emission rate program (California Air Resources Board 2020b).

5.3 IMPACTS

The following is a description of operational impacts of the North Richmond Warehouse Project on criteria pollutant emissions.

5.3.1 Scenario 1

Table 13 shows operational criteria pollutant emissions that would be generated by Scenario 1 of the North Richmond Warehouse Project. As shown in **Table 13**:

- Emissions for ROG, NO_x, PM_{10}, and $PM_{2.5}$ would all be lower than BAAQMD significance thresholds.
- Emissions expressed in both pounds per day and tons per year would be lower than BAAQMD significance thresholds.
- Emissions in all four of the analysis years (i.e., 2021, 2023, 2025, and 2027) would be lower than BAAQMD significance thresholds.

Table 13. Operational Emissions - Scenario 1

Category	Criteria Pollutant Emissions in Pounds per Day				Criteria Pollutant Emissions in Tons per Year			
	ROG	NO_x	PM_{10}	$PM_{2.5}$	ROG	NO_x	PM_{10}	$PM_{2.5}$
BAAQMD Significance Thresholds	54	54	82	54	10	10	15	10
Year 2021	12.97	52.54	30.19	8.25	2.27	9.40	5.31	1.46
Significant Impact?	No	No	No	No	No	No	No	No
Year 2023	11.92	33.74	30.04	8.11	2.08	6.03	5.29	1.43
Significant Impact?	No	No	No	No	No	No	No	No
Year 2025	11.47	31.26	30.00	8.07	2.01	5.60	5.28	1.42
Significant Impact?	No	No	No	No	No	No	No	No
Year 2027	11.16	29.42	29.99	8.06	1.96	5.28	5.28	1.42
Significant Impact?	No	No	No	No	No	No	No	No

Notes: For pounds per day, the highest of winter and summer values are shown.
ROG = reactive organic gases. NO_x = nitrogen oxides. PM_{10} = inhalable particulate matter.
$PM_{2.5}$ = fine particulate matter. BAAQMD = Bay Area Air Quality Management District.

Therefore, according to methods described in the *Significance Thresholds* section of the *Air Quality Study*, the impact of Scenario 1 on operational criteria pollutant emissions is considered less than significant, and no mitigation measures are required.

5.3.2 Scenario 2

Table 14 shows operational criteria pollutant emissions that would be generated by Scenario 2 of the North Richmond Warehouse Project. As shown in **Table 14**:

- Emissions for ROG, NO_x, PM_{10}, and $PM_{2.5}$ would all be lower than BAAQMD significance thresholds.
- Emissions expressed in both pounds per day and tons per year would be lower than BAAQMD significance thresholds.
- Emissions in all four of the analysis years (i.e., 2021, 2023, 2025, and 2027) would be lower than BAAQMD significance thresholds.

Therefore, according to methods described in the *Significance Thresholds* section of the *Air Quality Study*, the impact of Scenario 2 on operational criteria pollutant emissions is considered less than significant, and no mitigation measures are required.

5.3.3 Scenario 3

Table 15 shows operational criteria pollutant emissions that would be generated by Scenario 3 of the North Richmond Warehouse Project. As shown in **Table 15**:

- Emissions for ROG, NO_x, PM_{10}, and $PM_{2.5}$ would all be lower than BAAQMD significance thresholds.
- Emissions expressed in both pounds per day and tons per year would be lower than BAAQMD significance thresholds.
- Emissions in all three of the analysis years (i.e., 2021, 2023, 2025, and 2027) would be lower than BAAQMD significance thresholds.

Therefore, according to methods described in the *Significance Thresholds* section of the *Air Quality Study*, the impact of Scenario 3 on operational criteria pollutant emissions is considered less than significant, and no mitigation measures are required.

Table 14. Operational Emissions - Scenario 2

Category	Criteria Pollutant Emissions in Pounds per Day				Criteria Pollutant Emissions in Tons per Year			
	ROG	NO_x	PM_{10}	$PM_{2.5}$	ROG	NO_x	PM_{10}	$PM_{2.5}$
BAAQMD Significance Thresholds	54	54	82	54	10	10	15	10
Year 2021	11.47	23.14	30.03	8.09	2.00	4.03	5.28	1.43
Significant Impact?	No	No	No	No	No	No	No	No
Year 2023	10.84	22.70	30.02	8.09	1.90	3.97	5.28	1.43
Significant Impact?	No	No	No	No	No	No	No	No
Year 2025	10.31	17.78	29.99	8.06	1.81	3.11	5.28	1.42
Significant Impact?	No	No	No	No	No	No	No	No
Year 2027	10.53	27.84	29.98	8.05	1.76	3.08	5.27	1.42
Significant Impact?	No	No	No	No	No	No	No	No

Notes: For pounds per day, the highest of winter and summer values are shown.
ROG = reactive organic gases. NO_x = nitrogen oxides. PM_{10} = inhalable particulate matter.
$PM_{2.5}$ = fine particulate matter. BAAQMD = Bay Area Air Quality Management District.

Table 15. Operational Emissions - Scenario 3

Category	Criteria Pollutant Emissions in Pounds per Day				Criteria Pollutant Emissions in Tons per Year			
	ROG	NO_x	PM_{10}	$PM_{2.5}$	ROG	NO_x	PM_{10}	$PM_{2.5}$
BAAQMD Significance Thresholds	54	54	82	54	10	10	15	10
Year 2021	11.11	22.21	30.02	8.09	1.94	3.88	5.28	1.43
Significant Impact?	No	No	No	No	No	No	No	No
Year 2023	10.48	21.81	30.01	8.08	1.84	3.83	5.28	1.43
Significant Impact?	No	No	No	No	No	No	No	No
Year 2025	9.92	12.48	29.94	8.01	1.75	2.18	5.27	1.41
Significant Impact?	No	No	No	No	No	No	No	No
Year 2027	9.62	12.16	29.93	8.00	1.70	2.13	5.27	1.41
Significant Impact?	No	No	No	No	No	No	No	No

Notes: For pounds per day, the highest of winter and summer values are shown.
ROG = reactive organic gases. NO_x = nitrogen oxides. PM_{10} = inhalable particulate matter.
$PM_{2.5}$ = fine particulate matter. BAAQMD = Bay Area Air Quality Management District.

5.3.4 Scenario 4

Table 16 shows operational criteria pollutant emissions that would be generated by Scenario 4 of the North Richmond Warehouse Project. As shown in **Table 16**:

- Emissions for ROG, NO_x, PM_{10}, and $PM_{2.5}$ would all be lower than BAAQMD significance thresholds.
- Emissions expressed in both pounds per day and tons per year would be lower than BAAQMD significance thresholds.
- Emissions in all four of the analysis years (i.e., 2021, 2023, 2025, and 2027) would be lower than BAAQMD significance thresholds.

Therefore, according to methods described in the *Significance Thresholds* section of the *Air Quality Study*, the impact of Scenario 4 on operational criteria pollutant emissions is considered less than significant, and no mitigation measures are required.

Table 16. Operational Emissions - Scenario 4

Category	Criteria Pollutant Emissions in Pounds per Day				Criteria Pollutant Emissions in Tons per Year			
	ROG	NO_x	PM_{10}	$PM_{2.5}$	ROG	NO_x	PM_{10}	$PM_{2.5}$
BAAQMD Significance Thresholds	54	54	82	54	10	10	15	10
Year 2021	11.36	22.84	30.02	8.09	1.98	3.98	5.28	1.43
Significant Impact?	No	No	No	No	No	No	No	No
Year 2023	10.48	21.81	30.01	8.08	1.84	3.83	5.28	1.43
Significant Impact?	No	No	No	No	No	No	No	No
Year 2025	9.70	3.20	29.86	7.93	1.71	0.53	5.25	1.40
Significant Impact?	No	No	No	No	No	No	No	No
Year 2027	9.31	2.34	29.84	7.92	1.65	0.39	5.25	1.40
Significant Impact?	No	No	No	No	No	No	No	No

Notes: For pounds per day, the highest of winter and summer values are shown.
ROG = reactive organic gases. NO_x = nitrogen oxides. PM_{10} = inhalable particulate matter.
$PM_{2.5}$ = fine particulate matter. BAAQMD = Bay Area Air Quality Management District.

SECTION 6
LOCAL CARBON MONOXIDE IMPACTS

Carbon monoxide emissions are strongly associated with vehicle travel. Elevated concentrations of CO are found in close proximity to roadway with high traffic volumes. Also, because vehicle CO emission rates increase as vehicle speeds decrease, elevated CO concentrations are associated with high levels of traffic congestion.

Regional ambient air quality monitoring data demonstrate that CO concentrations are well below the applicable standards, despite long-term upward trends in vehicle miles traveled. This confirms that the potential for localized increases in CO concentrations from increased traffic has been greatly reduced in recent years. Improvements in motor vehicle exhaust controls since the early 1990s and the use of oxygenated fuels have substantially reduced CO emissions from motor vehicles. In the BAAQMD in 2019, the maximum one-hour recorded concentration of CO was 5.6 ppm, compared to the state one-hour standard of 20 ppm. The maximum eight-hour average recorded concentration was 1.7 ppm, compared to the state and federal standards of 9 ppm (Bay Area Air Quality Management District 2020).

The potential impact of the North Richmond Warehouse Project on local CO levels was assessed by applying screening procedures described in the *California Environmental Quality Act Air Quality Guidelines –May 2017* (Bay Area Air Quality Management District 2017b) and then, if indicated by the screening procedures, conducting detailed microscale air quality dispersion modeling.

6.1 SIGNIFICANCE THRESHOLDS

The screening procedure applied in this *Air Quality Study* focuses on the effects of the Proposed Project on traffic operations. Since elevated CO concentrations are associated with traffic congestion, a project is considered to have no potential for significant impacts on CO concentrations if it does not substantially contribute to excessive traffic congestion.

The BAAQMD *California Environmental Quality Act Air Quality Guidelines –May 2017* presents the following screening criteria to determine if "The proposed project would result in a less-than-significant impact to localized CO concentrations . . .":

1. "Project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.

2. "The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

3. "The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway)."

6.2 METHODOLOGY

The BAAQMD screening procedures described above were applied to traffic analysis of the Proposed Project, *Final North Richmond Development TIA* (Fehr & Peers 2021). The traffic analysis presents an evaluation of the project-related effects on traffic operations at 18 study intersections. The traffic analysis evaluated project-related traffic effects using both near-term existing background conditions, and long-term cumulative background conditions. In the analyses of each of these two background conditions, the traffic analysis presents evaluation of conditions both without the Proposed Project and with the Proposed Project. Data from the traffic analysis were used to determine whether CO concentrations in excess of the air quality standards would occur.

6.3 IMPACTS

The following is a description of local CO impacts of the North Richmond Warehouse Project.

Based on information presented in the traffic analysis of the Proposed Project, *Final North Richmond Development TIA,* the highest traffic volumes at the study intersections would be 6,018 during the a.m. peak hour, and 7,354 during the p.m. peak hour. Therefore, the project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour. Because the project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour, the Proposed Project is considered to have a less than significant impact on CO concentrations.

SECTION 7
TOXIC AIR CONTAMINANT IMPACTS

This section of this *Air Quality Study* describes the impact of the North Richmond Warehouse Project related to three types of toxic air contaminants (TAC) emissions:

- naturally-occurring asbestos (NOA),
- construction-related diesel particulate matter (DPM), and
- TAC in the context of public health risk.

7.1 SIGNIFICANCE THRESHOLDS

The following describes thresholds applied in this *Air Quality Study* to determine the significance of impacts associated with TAC emissions.

7.1.1 Naturally-Occurring Asbestos

Portions of Contra Costa County contain a type of rock referred to as "ultramafic". As a result, these areas are considered to be more likely to contain NOA. Emissions of NOA have been attributed to soil-disturbing activities, including construction activities. Construction activities could entrain NOA into the air, exposing on-site sensitive uses and other land uses in areas surrounding a project site to NOA.

A screening evaluation of potential impacts associated with NOA was conducted for this *Air Quality Study* based on a review of the California Department of Conservation map *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos* (California Department of Conservation 2000).

If the screening evaluation indicates an elevated likelihood of NOA being on the project site, the impact associated with NOA will be considered significant. If the screening evaluation does not indicate an elevated likelihood of NOA being on the project site, the impact will be considered less-than-significant.

7.1.2 Construction-Related Diesel Particulate Matter

A component of diesel exhaust is particulate matter. ARB has identified DPM as a TAC (http://www.arb.ca.gov/research/diesel/diesel-health.htm). While the BAAQMD does not present significance threshold specifically for construction-related DPM, the significance thresholds presented in **Table 11** do include thresholds for PM_{10} and $PM_{2.5}$ from construction-related

exhaust. Because a substantial portion of construction-related exhaust is emitted by diesel engines, the PM_{10} and $PM_{2.5}$ construction-related exhaust thresholds presented in **Table 11** are used in this *Air Quality Study* to determine the significance of construction-related DPM emissions.

The BAAMQD thresholds for construction-related exhaust include 82 ppd for PM_{10} and 54 ppd for $PM_{2.5}$.

7.1.3 Public Health Risk

A health risk assessment (HRA) has been prepared for the North Richmond Warehouse project, *Final Analysis of Public Health Risks At a Proposed Land Use Development – Richmond, California* (Environmental Permitting Specialists 2020). The HRA assessed four types of public health risks:

- Cancer Risk,
- Acute Non-Cancer Risk,
- Chronic Non-Cancer Risk, and
- Annual Exposure to Fine Particulate ($PM_{2.5}$)

The objective of the HRA is to determine if the Proposed Project is likely to expose nearby residents or workers to significant health risks. The criteria used to determine if health risks are significant are shown in **Table 17**.

7.2 METHODOLOGY

The following describes the sources of information used to evaluate impacts associated with TAC emissions.

7.2.1 Naturally-Occurring Asbestos

The screening evaluation for NOA was based on documents available from the California Department of Conservation (California Department of Conservation, Division of Mines and Geology 2000).

7.2.2 Construction-Related Diesel Particulate Matter

As described in Section 4.2, *Methodology*, of this *Air Quality Study*, the CalEEMod emissions model has been used to estimate construction-related emissions.

7.2.3 Public Health Risk

The HRA prepared for the North Richmond Warehouse project evaluated both short-term and long-term emissions of TAC. Short-term emissions are associated with the construction phase of the project. Long-term emissions are associated with occupancy and operation of the project.

Table 17. Thresholds of Significance for Public Health Risks

Risk Metric	Project Level	Cumulative
Residential Lifetime Cancer Risk	10 cancers per million	100 cancers per million
Workplace Cancer Risk	10 cancers per million	100 cancers per million
Chronic Hazard Index	1	10
Acute Hazard Index	1	10
Exposure to Annual $PM_{2.5}$ Concentration	0.3 $\mu g/m^3$	0.8 $\mu g/m^3$

Note: $\mu g/m^3$ = micrograms per cubic meter
Sources: Bay Area Air Quality Management District 2017b, and Environmental Permitting Specialists 2020.

The estimate of project-related emissions included use of the CalEEMod emissions model, as described in this *Air Quality Study*.

Exposure assessment involved translating the emission rate of individual toxic air contaminants expressed in pounds per hour into the concentration expressed in grams per cubic meter or parts per million of each toxic air contaminant. The key step in performing an exposure assessment is the application of an air dispersion model. The dispersion model incorporates the local meteorological data (e.g., wind speed, wind direction, local temperature, inversion heights, etc.), stack height, exhaust flow characteristics, into the concentration of individual air contaminant. The AERMOD dispersion model, recommended by EPA and the BAAQMD, was used in the HRA. A more detailed description of the methodology used in the HRA is presented in Environmental Permitting Specialists 2020.

7.3 IMPACTS

The following is a description of the TAC emission impacts of the North Richmond Warehouse Project.

7.3.1 Naturally-Occurring Asbestos

Based on information presented in the California Department of Conservation map *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos*¸ the areas more likely to contain NOA which are nearest to the North Richmond Warehouse Project site are approximately four miles southeast of the project site in the area between Richmond and El Cerrito.

Because no portion of the North Richmond Warehouse Project site is in an area considered more likely to contain NOA, the impact of the Proposed Project on NOA is considered less-than-significant and no mitigation measures are required.

7.3.2 Construction-Related Diesel Particulate Matter

Table 12 shows project-related construction exhaust emissions for PM_{10} and $PM_{2.5}$. As shown in **Table 12**, PM_{10} emissions would be below the 82 ppd threshold, and $PM_{2.5}$ emissions would be below the 54 ppd threshold. Because construction-related exhaust emissions of PM_{10} and $PM_{2.5}$ would be below the BAAQMD significance threshold, the impact of the Proposed Project on construction-related diesel particulate matter is considered less than significant and no mitigation measures are required.

7.3.3 Public Health Risk

Table 18 presents a summary of the results of the HRA (Environmental Permitting Specialists 2020). As shown in the table, both construction phase and operational health risks were found to be less than the project level significance thresholds presented in **Table 17**.

Table 18. Summary of Maximum Health Risks at the Project Area

Risk Metric	Construction Phase	Operational (Occupancy) Phase	Significance Threshold	Significant?
Residential Cancer Risk	0.2 per million	1.76 per million	10 per million	No
Workplace Cancer Risk	0.344 per million	3.66 per million	10 per million	No
Chronic Hazard Index	N/A	< 0.001	1.0	No
Acute Hazard Index	N/A	0.002	1.0	No
Annual $PM_{2.5}$ Concentration at Nearby Homes	N/A	0.015 $\mu g/m^3$	0.3 $\mu g/m^3$	No

Note: $\mu g/m^3$ = micrograms per cubic meter
Source: Environmental Permitting Specialists 2020.

The HRA concluded the main source of cumulative public health risk within 1,000 of the project site is vehicular traffic along Richmond Parkway and Parr Boulevard. The results of the analysis presented in the HRA show that total cumulative cancer risk (project plus background) is estimated to equal 36.2 cancers per million. The cumulative cancer risk would be less than the cumulative significance thresholds presented in **Table 17**.

Based on the analysis presented in the HRA, the impact of the Proposed Project on public health risk is considered less than significant and no mitigation measures are required.

SECTION 8
GLOBAL CLIMATE CHANGE AND GREENHOUSE GAS IMPACTS

This section of this *Air Quality Study* describes the effects of the North Richmond Warehouse Project on global climate change and GHG emissions. Implementation of the Proposed Project would generate emissions which are associated with global climate change.

8.1 SIGNIFICANCE THRESHOLDS

Section 15064.4(a) of the State CEQA Guidelines states,

> "The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in section 15064. A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project."

Section 15064.4(b) of the State CEQA Guidelines states,

> "A lead agency should consider the following factors, among others, when assessing the significance of impacts from greenhouse gas emissions on the environment:
>
> "(1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;
>
> "(2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project."

Significance thresholds specified by the BAAQMD for GHG emissions are applied in this *Air Quality Study*. As shown in **Table 11**, the BAAQMD does not specify a significance threshold for construction-related GHG emissions. However, for disclosure purposes, construction-related GHG emissions were quantified and are presented in this study.

For operational GHG emissions, the BAAQMD provides three alternative thresholds:

- compliance with a qualified Greenhouse Gas Reduction Strategy,
- 1,100 metric tons (MT) of CO_2e per year, or
- 4.6 MT of CO_2e per service population per year.

The BAAQMD's thresholds of significance listed above were established based on meeting the 2020 GHG targets set forth in the AB 32 Scoping Plan (California Air Resources Board 2009). AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. Senate Bill 32 of 2016 extended California's GHG reduction programs beyond 2020. SB 32 contains language to authorize ARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030. ARB approved the 2017 *California's Climate Change Scoping Plan* update (California Air Resources Board 2017). The 2017 Scoping Plan update outlines the proposed framework of action for achieving the 2030 GHG target of 40 percent reduction in GHG emissions relative to 1990 levels.

Because the North Richmond Warehouse project would be constructed after 2020, the BAAQMD quantitative thresholds of significance listed above was adjusted to a "substantial progress" threshold that was calculated based on the SB 32 target of 40 percent below 1990 levels (i.e., 60 percent of 1990 levels), and the increase in service population from 2020 to 2030. The mass emission threshold of significance applied in this *Air Quality Study* is 660 MT of CO_2e per year (1,100 x 0.60 = 660). The service population threshold of significance applied in this *Air Quality Study* is 2.6 MT of CO_2e per service population per year (Avila pers. comm.).

If operation of the Proposed Project would generate GHG emissions that exceed the above thresholds, the project is considered to have a significant impact on GHG emissions.

8.2 METHODOLOGY

As described in more detail in section 4.2 *Methodology*, of this *Air Quality Study*, GHG emissions associated with construction and operation of the Proposed Project were estimated using the CalEEMod emissions modeling program (California Air Pollution Control Officers Association 2016) and the EMFAC2017 mobile source emission rate program (California Air Resources Board 2020b).

8.3 IMPACTS

As noted earlier in this *Air Quality Study* and shown in **Table 11**, the BAAQMD does not specify a significance threshold for construction-related GHG emissions. However, construction-related GHG were quantified for this study. Construction of the North Richmond Warehouse Project would generate 1,263.31 MT of CO_2e per year in the year 2021, and 72.09 MT of CO_2e per year in the year 2022.

The following is a description of operational impacts of the North Richmond Warehouse Project on global climate change and GHG emissions.

8.3.1 Scenario 1

Table 19 shows operational GHG emissions that would be generated by Scenario 1 of the North Richmond Warehouse Project. As shown in **Table 19**, GHG emissions would exceed the BAAQMD significance thresholds. GHG emissions would exceed:

- 660 MT of CO_2e per year in 2021, 2023, 2025 and 2027, and
- 2.6 MT of CO_2e per service population per year in 2021, 2023, 2025 and 2027.

Therefore, according to methods described in the *Significance Thresholds* section of the *Air Quality Study*, the impact of Scenario 1 on operational GHG emissions is considered significant. The following mitigation measure will reduce this impact to a less-than-significant level.

Table 19 shows the amount of Scenario 1 GHG emissions in excess of the significance threshold. This value is shown for each of the four analysis years. This information is also shown in the following tables for the other scenarios analyzed for this *Air Quality Study*. The amount of emissions allowable under the CO_2e per service population threshold is calculated as the higher of the following:

- The mass emissions threshold, which is 660 MT of CO_2e per year.

- The service population threshold of 2.6 MT of CO_2e per service population per year multiplied by 175 employees as the service population. The resulting amount of emissions allowable is 455 MT of CO_2e per year (2.6 x 175 = 455).

The allowable emissions calculated using the mass emissions threshold of 660 MT/yr is greater than the 455 MT/yr calculated using the service population threshold. As a result, the mass emissions threshold of 660 MT/yr is used as the allowable emissions.

The amount of GHG emissions in excess of the CO_2e significance threshold is calculated as the amount of emissions generated by the project less the amount of emissions allowable. As an example, for Scenario 1 in the year 2021, the amount of GHG emissions in excess of the CO_2e per service population significance threshold is calculated as 6,763.35 MT/yr less 660 MT/yr, which equals 6,103.35 MT/yr (6,763.35 – 660 = 6,103.35)

Mitigation Measure AQ-4: Purchase and Retire Carbon Offsets for Scenario 1. As shown in **Table 19**, Scenario 1 of the North Richmond Warehouse Project would exceed the CO_2e per service population per year thresholds by:

- 6,103.35 MT per year in 2021,
- 5,693.97 MT per year in 2023,
- 5,368.01 MT per year in 2025, and
- 5,095.69 MT per year in 2027.

The applicant shall purchase and retire carbon offsets in the amounts listed above. Purchases of carbon offsets shall be made for each year of the "project life".

The length of the project life shall be determined in consultation with, and in agreement with, the County of Contra Costa. The amount of offsets for years other than those listed above shall be the higher amount either before or after the years not listed. For example, in the year 2024 the amount shall be 5,693.97 MT per year.

GHG emissions control technology and emission control standards are reasonably anticipatable for the near-term future. However, technology and standards will change in the future. As a result, a process mutually-agreeable to the applicant and the County of Contra Costa shall be established to re-calculate the amount of offsets in the future.

Implementation of this mitigation measure will reduce GHG emissions impacts to a less-than-significant level.

Table 19. Operational Greenhouse Gas Emissions - Scenario 1

Category or Year	Greenhouse Gas Emissions and Significance of Impact
Significance Threshold (MT/Yr)	660
Significance Threshold (MT/Yr/Serv Pop)	2.6
2021 Emissions in MT/Yr	6,763.35
Emissions in MT/Yr/Serv Pop	38.65
Significant Impact?	Yes
MT/Yr Above the Significance Threshold	6,103.35
2023 Emissions in MT/Yr	6,353.97
Emissions in MT/Yr/Serv Pop	36.31
Significant Impact?	Yes
MT/Yr Above the Significance Threshold	5,693.97
2025 Emissions in MT/Yr	6,028.01
Emissions in MT/Yr/Serv Pop	34.45
Significant Impact?	Yes
MT/Yr Above the Significance Threshold	5,368.01
2027 Emissions in MT/Yr	5,755.69
Emissions in MT/Yr/Serv Pop	32.89
Significant Impact?	Yes
MT/Yr Above the Significance Threshold	5,095.69

Notes: MT/Yr/Serv Pop = metric tons per year per service population. MT/Yr = metric tons per year.

8.3.2 Scenario 2

Table 20 shows operational GHG emissions that would be generated by Scenario 2 of the North Richmond Warehouse Project. As shown in **Table 20**, GHG emissions would exceed the BAAQMD significance thresholds. GHG emissions would exceed:

- 660 MT of CO_2e per year in 2021, 2023, 2025 and 2027, and
- 2.6 MT of CO_2e per service population per year in 2021, 2023, 2025 and 2027.

Therefore, according to methods described in the *Significance Thresholds* section of the *Air Quality Study*, the impact of Scenario 2 on operational GHG emissions is considered significant. The following mitigation measure will reduce this impact to a less-than-significant level.

Mitigation Measure AQ-5: Purchase and Retire Carbon Offsets for Scenario 2. As shown in **Table 20**, Scenario 2 of the North Richmond Warehouse Project would exceed the CO_2e per service population per year thresholds by:

- 4,924.08 MT per year in 2021,
- 4,474.72 MT per year in 2023,
- 3,658.85 MT per year in 2025, and
- 3,300.77 MT per year in 2027.

The applicant shall purchase and retire carbon offsets in the amounts listed above. Purchases of carbon offsets shall be made for each year of the "project life".

The length of the project life shall be determined in consultation with, and in agreement with, the County of Contra Costa. The amount of offsets for years other than those listed above shall be the higher amount either before or after the years not listed. For example, in the year 2024 the amount shall be 4,474.72 MT per year.

GHG emissions control technology and emission control standards are reasonably anticipatable for the near-term future. However, technology and standards will change in the future. As a result, a process mutually-agreeable to the applicant and the County of Contra Costa shall be established to re-calculate the amount of offsets in the future.

Implementation of this mitigation measure will reduce GHG emissions impacts to a less-than-significant level.

Table 20. Operational Greenhouse Gas Emissions - Scenario 2

Category or Year	Greenhouse Gas Emissions and Significance of Impact
Significance Threshold (MT/Yr)	660
Significance Threshold (MT/Yr/Serv Pop)	2.6
2021 Emissions in MT/Yr	5,584.08
Emissions in MT/Yr/Serv Pop	31.91
Significant Impact?	Yes
MT/Yr Above the Significance Threshold	4,924.08
2023 Emissions in MT/Yr	5,134.72
Emissions in MT/Yr/Serv Pop	29.34
Significant Impact?	Yes
MT/Yr Above the Significance Threshold	4,474.72
2025 Emissions in MT/Yr	4,318.85
Emissions in MT/Yr/Serv Pop	24.68
Significant Impact?	Yes
MT/Yr Above the Significance Threshold	3,658.85
2027 Emissions in MT/Yr	3,960.77
Emissions in MT/Yr/Serv Pop	22.63
Significant Impact?	Yes
MT/Yr Above the Significance Threshold	3,300.77

Notes: MT/Yr/Serv Pop = metric tons per year per service population. MT/Yr = metric tons per year.

8.3.3 Scenario 3

Table 21 shows operational GHG emissions that would be generated by Scenario 3 of the North Richmond Warehouse Project. As shown in **Table 21**, GHG emissions would exceed the BAAQMD significance thresholds. GHG emissions would exceed:

- 660 MT of CO_2e per year in 2021, 2023, 2025 and 2027, and
- 2.6 MT of CO_2e per service population per year in 2021, 2023, 2025 and 2027.

Therefore, according to methods described in the *Significance Thresholds* section of the *Air Quality Study*, the impact of Scenario 3 on operational GHG emissions is considered significant. The following mitigation measure will reduce this impact to a less-than-significant level.

Mitigation Measure AQ-6: Purchase and Retire Carbon Offsets for Scenario 3. As shown in **Table 21**, Scenario 3 of the North Richmond Warehouse Project would exceed the CO_2e per service population per year thresholds by:

- 4,549.05 MT per year in 2021,
- 4,052.82 MT per year in 2023,
- 2,892.48 MT per year in 2025, and
- 2,569.23 MT per year in 2027.

The applicant shall purchase and retire carbon offsets in the amounts listed above. Purchases of carbon offsets shall be made for each year of the "project life".

The length of the project life shall be determined in consultation with, and in agreement with, the County of Contra Costa. The amount of offsets for years other than those listed above shall be the higher amount either before or after the years not listed. For example, in the year 2024 the amount shall be 4,052.82 MT per year.

GHG emissions control technology and emission control standards are reasonably anticipatable for the near-term future. However, technology and standards will change in the future. As a result, a process mutually-agreeable to the applicant and the County of Contra Costa shall be established to re-calculate the amount of offsets in the future.

Implementation of this mitigation measure will reduce GHG emissions impacts to a less-than-significant level.

Table 21. Operational Greenhouse Gas Emissions - Scenario 3

Category or Year	Greenhouse Gas Emissions and Significance of Impact
Significance Threshold (MT/Yr)	660
Significance Threshold (MT/Yr/Serv Pop)	2.6
2021 Emissions in MT/Yr	5,209.05
Emissions in MT/Yr/Serv Pop	29.77
Significant Impact?	Yes
MT/Yr Above the Significance Threshold	4,549.05
2023 Emissions in MT/Yr	4,712.82
Emissions in MT/Yr/Serv Pop	26.93
Significant Impact?	Yes
MT/Yr Above the Significance Threshold	4,052.82
2025 Emissions in MT/Yr	3,552.48
Emissions in MT/Yr/Serv Pop	20.30
Significant Impact?	Yes
MT/Yr Above the Significance Threshold	2,892.48
2027 Emissions in MT/Yr	3,229.23
Emissions in MT/Yr/Serv Pop	18.45
Significant Impact?	Yes
MT/Yr Above the Significance Threshold	2,569.23

Notes: MT/Yr/Serv Pop = metric tons per year per service population. MT/Yr = metric tons per year.

8.3.4 Scenario 4

Table 22 shows operational GHG emissions that would be generated by Scenario 4 of the North Richmond Warehouse Project. As shown in **Table 22**, GHG emissions would exceed the BAAQMD significance thresholds. GHG emissions would exceed:

- 660 MT of CO_2e per year in 2021, 2023, 2025 and 2027, and
- 2.6 MT of CO_2e per service population per year in 2021, 2023, 2025 and 2027.

Therefore, according to methods described in the *Significance Thresholds* section of the *Air Quality Study*, the impact of Scenario 4 on operational GHG emissions is considered significant. The following mitigation measure will reduce this impact to a less-than-significant level.

Mitigation Measure AQ-7: Purchase and Retire Carbon Offsets for Scenario 4. As shown in **Table 22**, Scenario 4 of the North Richmond Warehouse Project would exceed the CO_2e per service population per year thresholds by:

- 4,804.07 MT per year in 2021,
- 4,052.82 MT per year in 2023,
- 2,078.79 MT per year in 2025, and
- 1,655.87 MT per year in 2027.

The applicant shall purchase and retire carbon offsets in the amounts listed above. Purchases of carbon offsets shall be made for each year of the "project life".

The length of the project life shall be determined in consultation with, and in agreement with, the County of Contra Costa. The amount of offsets for years other than those listed above shall be the higher amount either before or after the years not listed. For example, in the year 2024 the amount shall be 4,052.82 MT per year.

GHG emissions control technology and emission control standards are reasonably anticipatable for the near-term future. However, technology and standards will change in the future. As a result, a process mutually-agreeable to the applicant and the County of Contra Costa shall be established to re-calculate the amount of offsets in the future.

Implementation of this mitigation measure will reduce GHG emissions impacts to a less-than-significant level.

Table 22. Operational Greenhouse Gas Emissions - Scenario 4

Category or Year	Greenhouse Gas Emissions and Significance of Impact
Significance Threshold (MT/Yr)	660
Significance Threshold (MT/Yr/Serv Pop)	2.6
2021 Emissions in MT/Yr	5,464.07
Emissions in MT/Yr/Serv Pop	31.22
Significant Impact?	Yes
MT/Yr Above the Significance Threshold	4,804.07
2023 Emissions in MT/Yr	4,712.82
Emissions in MT/Yr/Serv Pop	26.93
Significant Impact?	Yes
MT/Yr Above the Significance Threshold	4,052.82
2025 Emissions in MT/Yr	2,738.79
Emissions in MT/Yr/Serv Pop	15.65
Significant Impact?	Yes
MT/Yr Above the Significance Threshold	2,078.79
2027 Emissions in MT/Yr	2,315.87
Emissions in MT/Yr/Serv Pop	13.23
Significant Impact?	Yes
MT/Yr Above the Significance Threshold	1,655.87

Notes: MT/Yr/Serv Pop = metric tons per year per service population. MT/Yr = metric tons per year.

REFERENCES

Publications Cited

Bay Area Air Quality Management District. 2006. Bay Area 2005 Ozone Strategy. San Francisco, CA.

Bay Area Air Quality Management District. 2010. Adopted Air Quality CEQA Thresholds of Significance - June 2, 2010. San Francisco, CA.

Bay Area Air Quality Management District. 2011. California Environmental Quality Act Air Quality Guidelines – Updated May 2011. San Francisco, CA.

Bay Area Air Quality Management District. 2012. California Environmental Quality Act Air Quality Guidelines. San Francisco, CA.

Bay Area Air Quality Management District. 2017a. Spare the Air – Cool the Climate – A Blueprint for Clean Air and Climate Protection in the Bay Area – 2017 Final Clean Air Plan. San Francisco, CA.

Bay Area Air Quality Management District. 2017b. California Environmental Quality Act Air Quality Guidelines –May 2017. San Francisco, CA.

Bay Area Air Quality Management District. 2020. Bay Area Air Quality Management District Internet Website. http://www.baaqmd.gov/.

California Air Pollution Control Officers Association. 2016. CalEEMod – California Emissions Estimator Model User's Guide – Version 2016.3.1. Sacramento, CA.

California Air Resources Board. 2009. Climate Change Scoping Plan. Sacramento, CA.

California Air Resources Board. 2011. Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document. Sacramento, CA.

California Air Resources Board. 2014. First Update to the Climate Change Scoping Plan. Sacramento, CA.

California Air Resources Board. 2017. California's Climate Change Scoping Plan. Sacramento, CA.

California Air Resources Board. 2020a. California Air Resources Board Website http://www.arb.ca.gov

California Air Resources Board. 2020b. EMFAC2017 Web Database Internet Website. https://www.arb.ca.gov/emfac/2017/

California Department of Conservation, Division of Mines and Geology. 2000. A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos. Sacramento, CA.

California Energy Commission. 2005. Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2002 Update. Sacramento, CA.

California Energy Commission. 2018. 2019 Building Energy Efficiency Standards. Sacramento, CA.

Contra Costa, County of, 2010. Contra Costa County General Plan 2005-2020. Published January 18, 2005; reprinted July 2010.

Contra Costa, County of. 2015. Contra Costa County Climate Action Plan. Martinez, CA.

Environmental Permitting Specialists. 2020. Final Analysis of Public Health Risks At a Proposed Land Use Development - Richmond, California. Sacramento, CA.

Fehr & Peers. 2020. Scannell Weekday VMT (Light & Heavy vehicles). Walnut Creek, CA.

Fehr & Peers. 2021. Final North Richmond Development TIA. Walnut Creek, CA.

Intergovernmental Panel on Climate Change, United Nations. 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC. Geneva, Switzerland.

Lindhjem, Chris. 2008. Intermodal Yard Activity and Emissions Evaluations. 17th International Emission Inventory Conference. Portland, OR.

The Climate Registry. 2019. Utility-Specific Emission Factors Internet Webpage. https://www.theclimateregistry.org/our-members/cris-public-reports/

U. S. Environmental Protection Agency. 2006. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2004. Washington, DC.

World Meteorological Organization. 2005: Statement on the Status of the Global Climate in 2005: Geneva, 15 December 2005. Geneva, Switzerland.

Personal Communications

Anderson, Matt. Development Manager. Scannell Properties. February 14, March 13, March 26, April 1, and July 29, 2020 E-mail messages to Wayne Shijo, KD Anderson & Associates.

Avila, Francisco. Senior Planner. Contra Costa County Department of Conservation and Development. April 27, 2020 E-mail message to Ray Kapahi Environmental Permitting Specialists; Matt Anderson, Scannell Properties; and Todd Berryhill, Scannell Properties. July 29, 2020 E-mail message to Matt Anderson, Scannell Properties; and Todd Berryhill, Scannell Properties; Eric Zell, Zell and Associates. February 24, 2021 E-mail message to Mac Carlsen, Scannell Properties.

TECHNICAL APPENDIX

(Separate Electronic File)

Scannell Carbon Credit Requirements
(MM GHG-1g)

Year Qty	Year	MT CO2e
1	2021	4848
2	2022	4848
3	2023	4079
4	2024	4079
5	2025	2123
6	2026	2123
7	2027	1700
8	2028	1700
9	2029	1700
10	2030	1700
11	2031	1700
12	2032	1700
13	2033	1700
14	2034	1700
15	2035	1700
16	2036	1700
17	2037	1700
18	2038	1700
19	2039	1700
20	2040	1700
21	2041	1700
22	2042	1700
23	2043	1700
24	2044	1700
25	2045	1700
26	2046	1700
27	2047	1700
28	2048	1700
29	2049	1700
30	2050	1700
	Total	**62,900 MT CO2e**

B.2 - Health Risk Assessment

THIS PAGE INTENTIONALLY LEFT BLANK

Final Analysis of Public Health Risks At a Proposed Land Use Development

Richmond, California

February 26, 2021

Prepared For:
Scannell Properties
3468 Mt. Diablo Boulevard
Suite B-115
Lafayette, CA 94549
Contact: Matt Anderson
Development Manager

Prepared By:
Environmental Permitting Specialists
7068 Riverside Boulevard
Sacramento, CA 95831
Contact: Ray Kapahi, Principal
Tel: 916-687-8352
Ray.Kapahi@gmail.com

ENVIRONMENTAL PERMITTING SPECIALISTS
Air Quality • Permitting • OHSA • RMP/PSM

February 26, 2021

Mac Carlsen
Development Associate
Scannell Properties
3468 Mt. Diablo Blvd, Suite B115
Lafayette, CA 94549

Subject: Updated Health Risk Assessment (HRA) for North Richmond Warehouse Project

Dear Mac:

Attached please find the updated HRA for the North Richmond Warehouse Project North Richmond.

The updated HRA was prepared in response to a comment by First Carbon Solutions (FCS) dated January 27, 2021. The following comment were submitted by FCS on the January 11, 2021 HRA:

"Please provide a note in Table 2-2 specifying which vehicle types from the County-approved scenario matrix, dated July 27, 2020, are included in the "on-site service vehicles" category".

We have added a footnote to Table 2-2 in the HRA clarifying that 100% of the on-site service vehicles (e.g., yard equipment) was assumed to be diesel powered as defined in Scenario 1 and consistent with vehicles included in the Air Quality Study.

No other changes have been made to the HRA.

Sincerely,

Ray Kapahi

Ray Kapahi
Principal

7068 Riverside Blvd.,, Sacramento, CA 95831 • Office: 916-687-8352• Mobile: 916-806-8333

TABLE OF CONTENTS

SECTION 1: INTRODUCTION…… 3
1.1 Background and Facility Location
1.2 Scope of a Health Risk Assessment
1.3 Significance Criteria

SECTION 2: PROCESS DESCRIPTION AND SUMMARY OF EMISSIONS …… 7
2.1 Process Description
2.2 Summary of Emissions

SECTION 3: EXPOSURE ASSESSMENT…… 9
3.1 Model Setup and Options
3.2 Modeling Grid
3.2 Meteorological Data

SECTION 4: HEALTH RISK ASSESSMENT …… 13

SECTION 5: RESULTS AND CONCLUSIONS …… 22

SECTION 5: REFERENCES…… 23

APPENDIX
A: CalEEMod Model Emission Reports
B: Traffic Data
C: Detailed Emission Calculations
D: Excerpts of AERMOD Model Report
E: Excerpts of HARP Model
F: Cumulative Risk Emission Estimate

SECTION 1: INTRODUCTION

1.1 Background and Project Area

Environmental Permitting Specialists (EPS) has been retained by Scannell Properties to evaluate public health risks associated with the proposed North Richmond Parr Boulevard Development to be located in Richmond (Contra Costa County), California. This risk analysis is in support of an Environmental Impact report (EIR) by Contra Costa County Planning department.

The proposed project development would consist of two warehouse buildings on a 29.4 acre site. The two buildings would occupy approximately 327,633 square feet. The project would be located at the Northeast corner of Parr Boulevard and North Richmond Parkway in Richmond. Figures 1-1 and 1-2 illustrate the project location and site map respectively. Construction is expected to begin in January 2021 and be completed by the end of 2021. The buildings would be occupied in 2021.

Both construction related and long-term health risks are evaluated. Public health risks refer to four (4) types of risks. These are:

1. Cancer Risk
2. Acute Non-Cancer Risk
3. Chronic Non-Cancer Risk
4. Annual exposure to Fine Particulate (PM-2.5)

The objective of the risk assessment is to determine if the proposed project is likely to expose nearby residents or workers to significant health risks. The criteria used to determine if health risks are significant is discussed in Section 1.3 of this report.

1.2 Scope of the Risk Assessment

Preparation of risk assessments is a three step process. The first step is to identify potential contaminants that may lead to public health risks. The second step is to assess the amount of contaminants that may reach the public (exposure assessment). The last step is to calculate the magnitude of the health risk as a result of exposure to harmful contaminants on the basis of the toxicology of the contaminants.

The Office of Environmental Health Hazard Assessment (OEHHA), and the Bay Area Air Quality Management District (BAAQMD) have provided guidance on the procedures that should be used, including, toxicological data for individual contaminants. While this risk assessment uses certain procedures and data from OEHHA and BAAQMD Guidelines, this assessment is not intended to satisfy the reporting requirements under AB-2588 “Air Toxics” Hot Spots program.

1.3 Significance Criteria

The following significance criteria are used in this report to assess the significance of public health risks. These criteria are based on the May 2017 BAAQMD CEQA Air Quality Guidelines. These Guidelines are designed to inform the public and the Lead Agencies of the extent of airborne emissions from stationary sources and the potential public health impacts associated with such emissions.

Table 1-1
Thresholds of Significance for Public Health Risks

Risk Metric	Project Level	Cumulative
Residential Lifetime Cancer Risk	10 cancers per million	100 cancers per million
Workplace Cancer Risk	10 cancers per million	100 cancers per million
Chronic Hazard Index	1	10
Acute Hazard Index	1	10
Exposure to Annual PM-2.5 Concentration	0.3 ug/m3	0.8 ug/m3
Note: ug/m3= micrograms per cubic meter		

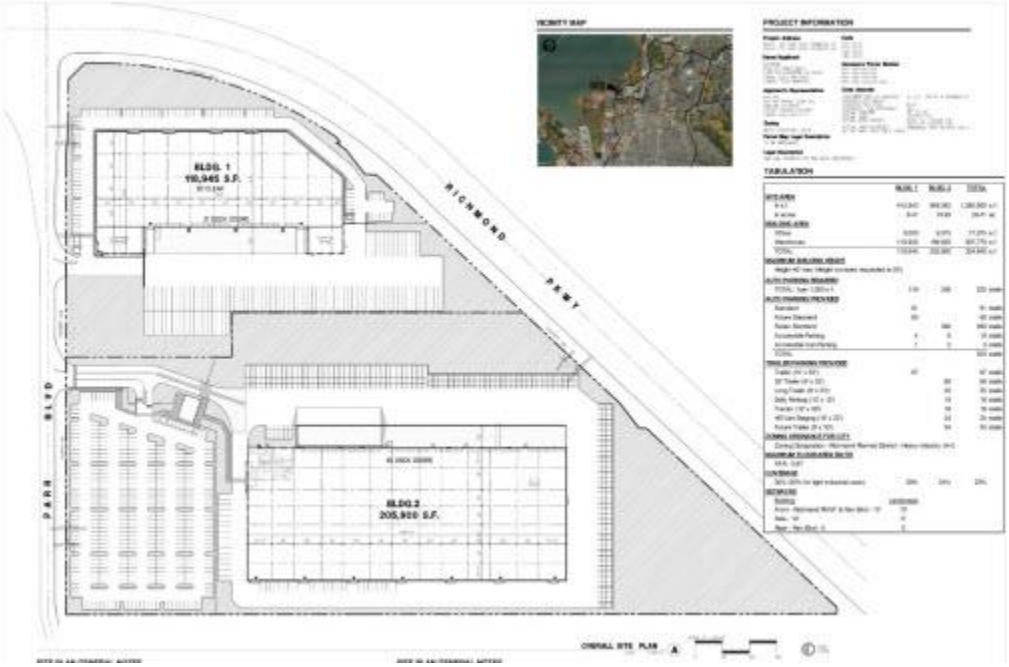
1.4 Report Organization

This report is divided into four Sections and two Appendices. Immediately following this Introduction, Section 2 discusses the short-term (construction related) and long-term (operational or occupancy phase) emissions associated with the project. This is followed by Section 3 that describes the exposure assessment. This assessment described the data and tools used to determine the dispersion pattern of emissions from the project. This analysis takes into account the location of nearby homes and businesses, local wind patterns and topography. Section 4 describes the risk calculation that combines the results from Sections 2 and 3 to calculate health risks. The report concludes with Section 4 that discusses the results and the significance of the findings. Technical data and calculations appear in the Appendices.

Figure 1-1
Vicinity Map
Source: K. D. Anderson

Figure 1-2
Site Map

Source: K. D. Anderson



SECTION 2: EMISSIONS SUMMARY

EPS evaluated both short-term and long term emissions of toxic air contaminants (TACs) for this project. Short-term emissions are associated with the construction phase and typically last 1 to 2 years depending on the project and construction schedule. Long-term emissions are associated with operational or occupancy phase.

EPS relied, in part, on air quality analysis completed by K. D. Anderson that provided annual emissions during the construction and operational phases. These data were supplemented with additional data such as emissions from idling of diesel trucks, on-site movement of trucks, emissions from transport refrigeration units, and re-suspension of road dust.

2.1 Construction (Short-Term) Emissions

The main toxic air contaminant associated with construction is diesel exhaust consisting of fine particulate matter (DPM) from construction equipment. Emissions of fine particulate matter (PM-2.5) from construction equipment is used as a surrogate of DPM.

EPS reviewed the September 8, 2020 Air Quality Study and Appendices prepared by K. D. Anderson. The Appendices included CalEEMod reports providing daily and annual emissions for the construction and operational phases. K. D. Anderson provided an updated estimate of annual emissions for the construction phase. The current analysis uses this mitigated estimate of annual emissions. These emissions are summarized below in Table 2-1. The annual emissions under "Exhaust PM2.5" serve as a surrogate of DPM emissions and was used in calculating construction related health risks. The average annual emission rate over two years of DPM is estimate to be 0.08125 tons per year or 162.5 pounds per year.

Table 2-1

Mitigated Construction

With Mitigation

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.5017	4.3298	5.9773	0.0141	0.7290	0.1562	0.8852	0.2745	0.1487	0.4232	0.0000	1,258.2065	1,258.2065	0.2041	0.0000	1,263.3099
2022	0.4934	0.3212	0.4206	8.1000e-004	0.0149	0.0147	0.0296	4.0100e-003	0.0138	0.0178	0.0000	71.7092	71.7092	0.0153	0.0000	72.0904
Maximum	**0.5017**	**4.3298**	**5.9773**	**0.0141**	**0.7290**	**0.1562**	**0.8852**	**0.2745**	**0.1487**	**0.4232**	**0.0000**	**1,258.2065**	**1,258.2065**	**0.2041**	**0.0000**	**1,263.3099**

Source: K. D. Anderson Sept 2020

An excerpt of the CalEEMod emissions report is provided in Appendix A.

2.2 Operational (Long-Term) Emissions

Long-term (occupancy phase) toxic emissions are associated with several on-site and off-site activities. Off-site emissions were calculated within 1,000 feet of the project boundary. The 1,000 feet is the "zone of influence" noted in the BAAQMD CEQA Guidelines. In addition to TACs, the BAAQMD CEQA Guidelines require that exposure to annual concentration of PM-2.5 be evaluated. The sources of emissions are summarized below in Table 2-2.

Table 2-2 Summary of Emission Sources (Operational Phase)	
On-Site Emission Sources	**Off-Site Emission Sources**
Truck Idle - DPM	Light and Heavy Duty Trucks - DPM, - PM-2.5 (from tire and brake wear)
On-Site Service Equipment - DPM	Automobile Travel - various TACs
On-Site Truck Movement - DPM	Re-Suspended Road Dust - PM-2.5
Note: 100% of the on-site service vehicles (e.g., yard equipment) was assumed to be diesel powered as defined in Scenario 1.	

The average daily volume of vehicles was provided by Fehr & Peers and is provided in Appendix B. Daily number of vehicles was estimated to be 1,920 vehicles per day. Of this volume, automobiles and light duty vans account for 1,755 vehicles per day. Heavy duty trucks account for the remainder 585 vehicles per day or 30% of the total vehicles. A breakdown of vehicles is shown in Table 2-3. See Appendix B for addition traffic data.

Table 2-3 Summary of Daily Vehicular Traffic	
Vehicle Type	Daily Trips
Automobiles	1,335
Delivery Vans	420
Heavy Trucks	165
Total	1,920

Source: Fehr & Peers

A summary of emissions is provided in Table 2-4. Detailed calculations are provided in Appendix C.

Table 2-4
Summary of Emissions in Pounds per Year

Pollutant	On-Site Truck Idle, etc.	Off-Site Truck Travel	Off-Site Automobile Travel	Total (lbs/day)
DPM	56.10	0.63	None	56.73
Total PM-2.5		449.42		449.42
1,3 Butadiene			0.685	0.685
Acetaldehyde			0.565	0.565
Benzene			9.234	9.234
Formaldehyde			2.625	2.625

The emissions presented in Table 2-4 indicate a very low level of emissions. This is due to the low traffic volume and the low level of tailpipe emissions. For example, based on EMFAC 2017 emission estimated for the San Francisco Bay area, a heavy truck releases only 0.019 grams per mile or 0.000042 pound per mile of DPM. For 165 trucks per day, this equates to less than 0.0069 pounds per mile (0.11 ounce per mile).

SECTION 3: EXPOSURE ASSESSMENT

Exposure assessment involves translating the emission rate (e.g., lbs/hr) of individual toxic air contaminants (presented in Tables 2-1 and 2-4) into the concentration (e.g., grams/cubic meter or parts per million) of each toxic air contaminant. The key step in performing an exposure assessment is the application of an air dispersion model. The dispersion model incorporates the local meteorological data (wind speed, wind direction, local temperature, inversion heights, etc.), stack height, exhaust flow characteristics, into the concentration of individual air contaminant. EPA and the BAAQMD recommended AERMOD dispersion model was employed in the current exposure assessment.

This section discusses the model set-up, the extent of the modeling area, and the choice and duration of meteorological data.

3.1 Model Set-Up

The following regulatory default options were used. They are based on the latest EPA guidance on running AERMOD.

- Use of Calm Wind Processing
- Use of Missing Data Processing

For the construction phase, on-site emissions were modeled as a single area source. Construction traffic within 1,000 feet of the project were modeled as three line sources. For the operational phase, emissions were modeled as a single area source plus three line sources representing roadways leading to the project site. See Figure 3-1.

Emissions from the logistics park were modeled as a ground based area source. Emissions from vehicle movement were modeled as line sources. The line sources are treated as a series of small area sources in the AERMOD model. Adjustment due to changes in elevation in the modeling area were included using the digital elevation model (DEM)[1] terrain data.

For the construction phase, emissions were assumed to occur between 8 am and 5 pm. For the operational phase, emissions were assumed to occur 24/7.

3.2 Modeling Grid and Coordinate System

A rectangular (x-y) Cartesian coordinate system was used. A region 2,500 x 2,500 meters (1.5 miles x 1.5 miles) was used. The modeling region divided into 50 meter cells for a total of 3,600 individual receptors in the vicinity of the project area. See Figure 3-1 for a layout of the modeling grid. Most (estimated to equal 67%) of the traffic would be entering from the South along Richmond Parkway. About 30% of the traffic would enter from the North. The remaining (3%) would be coming from the East along Parr Blvd.

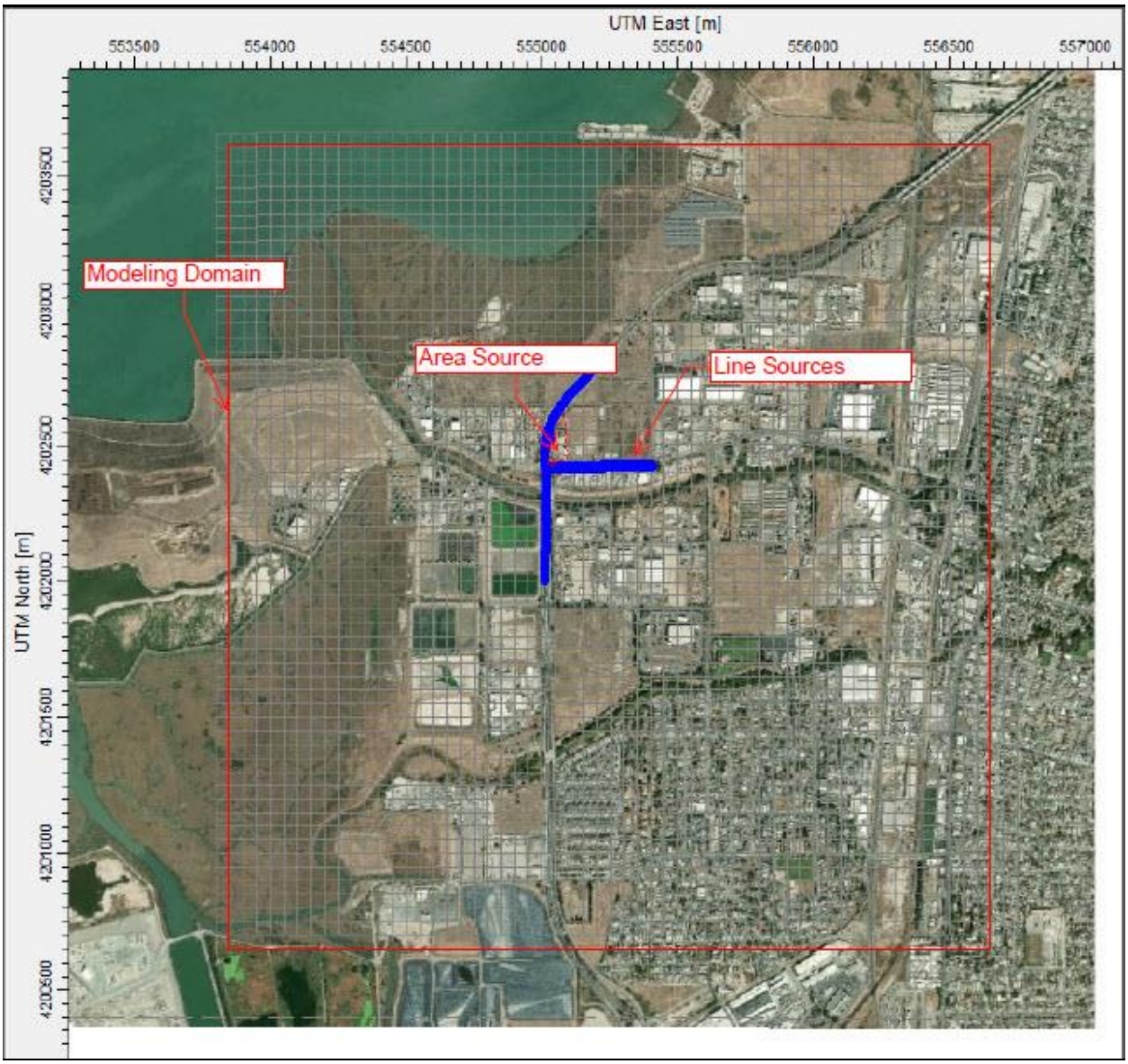
3.3 Meteorological Data

Four years of meteorological data (2013 to 2017) was used in the exposure assessment. The surface data (wind speed, wind direction, temperature, etc.) were recorded at Chevron Tower located in North Richmond. These data were provided by the BAAQMD. We note that the available data excluded data for 2014, as there are too many missing hours. Meteorological data must be at least 90% complete in order to be used in the HRA. As a result, five consecutive years of data were unavailable. This was reviewed with staff at the BAAQMD (James Cordova April 8, 2020) prior to use of the data.

[1] Information available at: https://www.usgs.gov/faqs/what-are-digital-elevation-models-dems?qt-news_science_products=0#qt-news_science_products

In addition to surface meteorological data, hourly inversion height data are also required. Four years of data from the nearest upper air station (Oakland Airport, CA) were used to develop hourly inversion heights.

Figure 3-1
Lay-Out of Modeling Grid and Emission Sources



SECTION 4: HEALT RISK ANALYSIS

Health risks from exposure to various toxic air contaminants is discussed in this section. The emission rates of various TACs discussed in Section 2 are used as a basis to quantify various health risks. EPS used the HARP2 risk model developed by CARB and the Office of Environmental Health Hazard Assessment (OEHHA)[2] to calculate the actual health risks. As noted in Section 1, four types of health risks were calculated (cancer, chronic non-cancer, acute non-cancer and annual PM-2.5 concentration). The exposure duration for each type of risk is as follows:

Table 4-1
Exposure Duration for Various Risks

Risk	Construction Phase	Operational Phase
Residential Cancer Risk	2 years	30 years
Worker Cancer Risk	2 years	25 years
Chronic Hazard Index	2 years	30 years
Acute Hazard Index	1 hour	1 hour
PM-2.5	N/A	1 Year

4.1 Cancer Risks – Construction Phase

The modeling results for the construction phase are shown in Figure 4-1. This figure shows the spatial distribution of residential cancer risk based on a 2 year exposure in the vicinity of the project site. The results show that the residential cancer risk varies between 8 to less than 0.1 cancers per million depending on location. The maximum cancer risk at the closest residential area located to the South (Receptor # 474) on Malcolm Drive is 0.2 cancers per million.

The spatial distribution of worker cancer risk is shown in Figure 4-2. Worker cancer risk accounts for reduced exposure (40 hours per week instead of 24/7). The 2 year exposure duration beings at age 18 instead of 3rd trimester. The maximum worker risk occurs just West of Richmond Parkway and is estimated to equal 0.344 (Receptor # 719). The cancer risk is lower at all other worker locations.

4.2 Cancer Risks – Operational Phase

The spatial distribution of residential (30 year) cancer risk is shown in Figure 4-3. The results are in terms of a probability (cancers risk per million). The maximum cancer risk at nearby homes is 1.76 cancers per million. These homes are along Malcolm Drive to the South. Figure 4-4 presents the cancer risk at nearby commercial and workplaces.

[2] OEHHA Hotspots Analysis and Reporting Program (HARP) available at: https://ww3.arb.ca.gov/toxics/harp/harp.htm

The maximum non-cancer risks at nearby homes were calculated in terms of a hazard index (HI). The results as follows:

Maximum Chronic Non-Cancer (HI); 1.16×10^{-4}

Maximum Acute Non-Cancer HI: 2.05×10^{-3}

Excerpts of the HARP2 model showing the calculated health risks are provided in Appendix E.

Figure 4-1
Spatial Variation of Residential Cancer Risk per Million
Construction Phase

Figure 4-2
Spatial Variation of Worker Cancer Risk per Million
Construction Phase

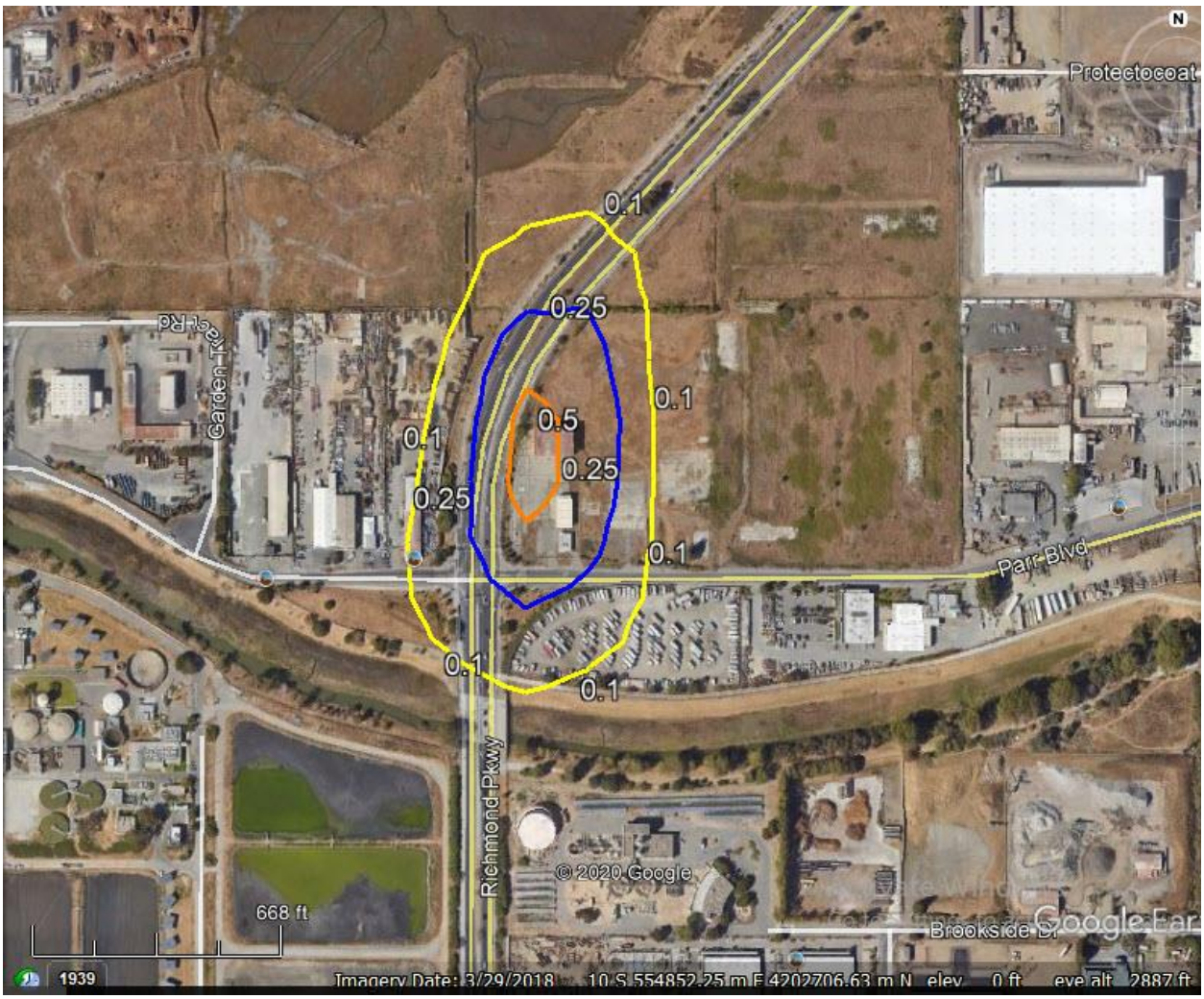


Figure 4-3

Spatial Variation of 30 Year Residential Cancer Risk per Million
Operational Phase

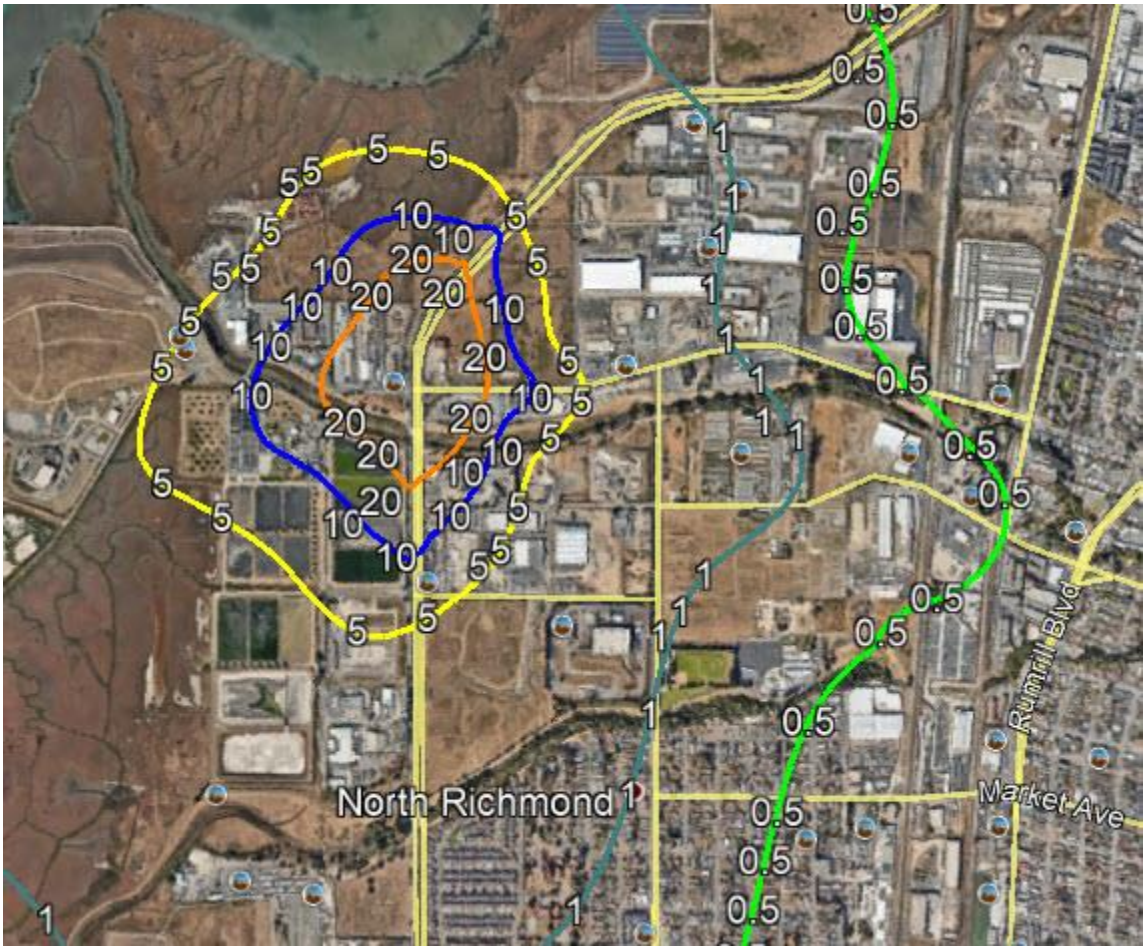
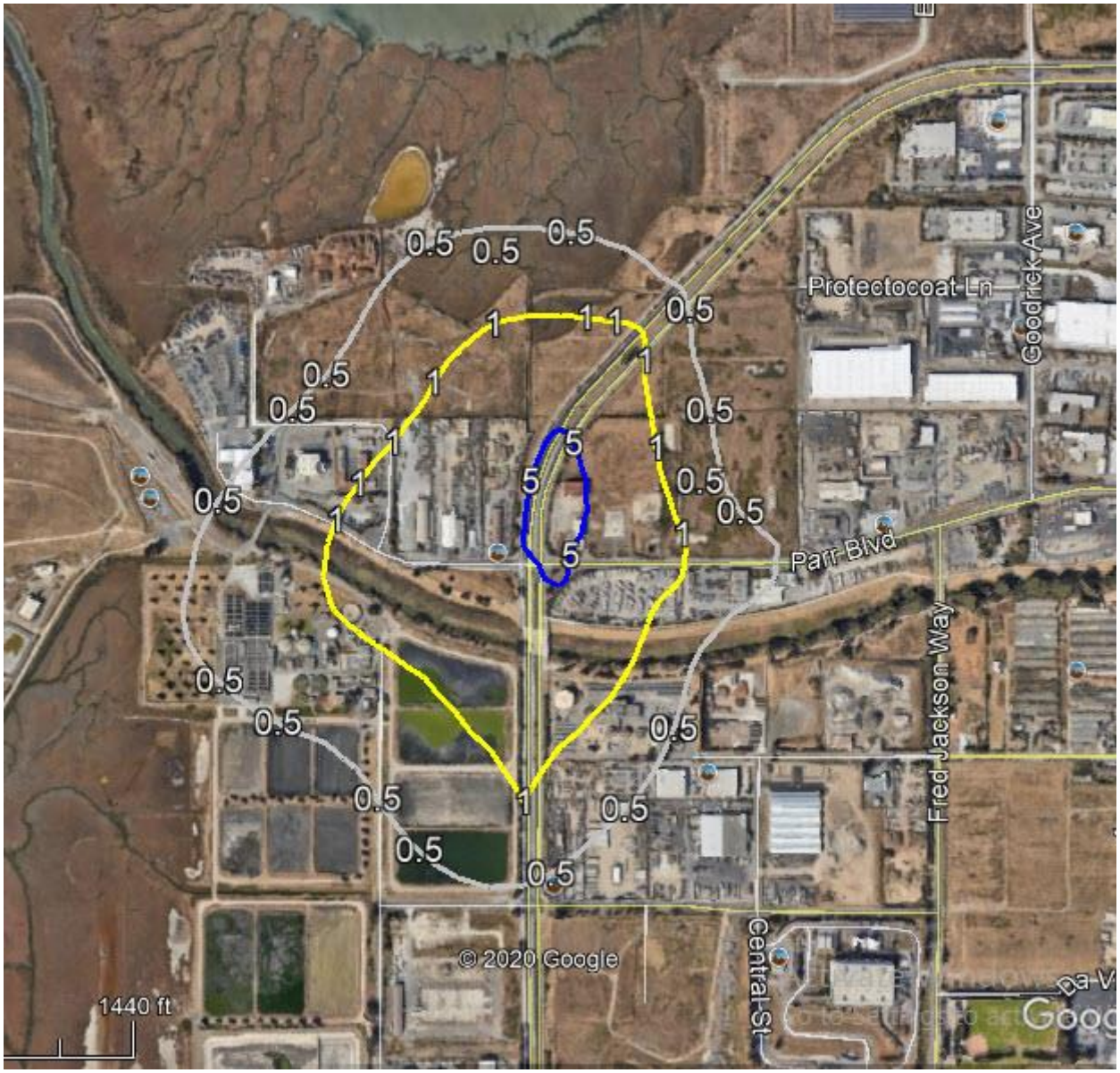


Figure 4-4
Spatial Variation of 25 Year Worker Cancer Risk per Million
Operational Phase



4.3 Annual PM-2.5 Risk – Operational Phase

The spatial distribution of annual PM-2.5 concentration is shown in Figure 4-5. The annual concentration at nearby homes varies between 0.015 to less than 0.01 micrograms per cubic meter (ug/m3). This is well below the threshold of significance set by the BAAQMD of 0.3 ug/m3. Excerpts of the AERMOD model report are provided in Appendix D.

4.4 Cumulative Impacts

The two main sources within 1,000 feet of the project are:

1. Vehicular traffic along Richmond Parkway and Parr Boulevard

2. East Bay Municipal District Water Reclamation Plant at 105 Brookside Drive

Based on daily traffic volumes estimated by Fehr & Peers, EPS estimate the annual estimate of toxic emissions from autos and heavy duty trucks. These annual emissions were used to calculate the back ground 30-year residential cancer risk. A copy of the emissions estimates is provided in Appendix F.

The EBMUD facility does not have any boilers or heaters. There is one emergency standby electric generator for which a BAAQMD permit is required. Other than the generator, there are no other permitted sources. As a result, this facility would not contribute to the background cancer risk.

The results of the analysis show that the background cancer risk is approximately 35 cancer per million adjacent to Richmond Parkway. See attached Figure 4-6. The cancer risk at nearby homes attributable to emissions from the project are 1.76 cancers per million. Total cumulative cancer risk (project + background) is estimated to equal 36.2 cancers per million.

Figure 4-5
Spatial Variation of Annual PM-2.5 Concentration
In micrograms per cubic meter
Operational Phase

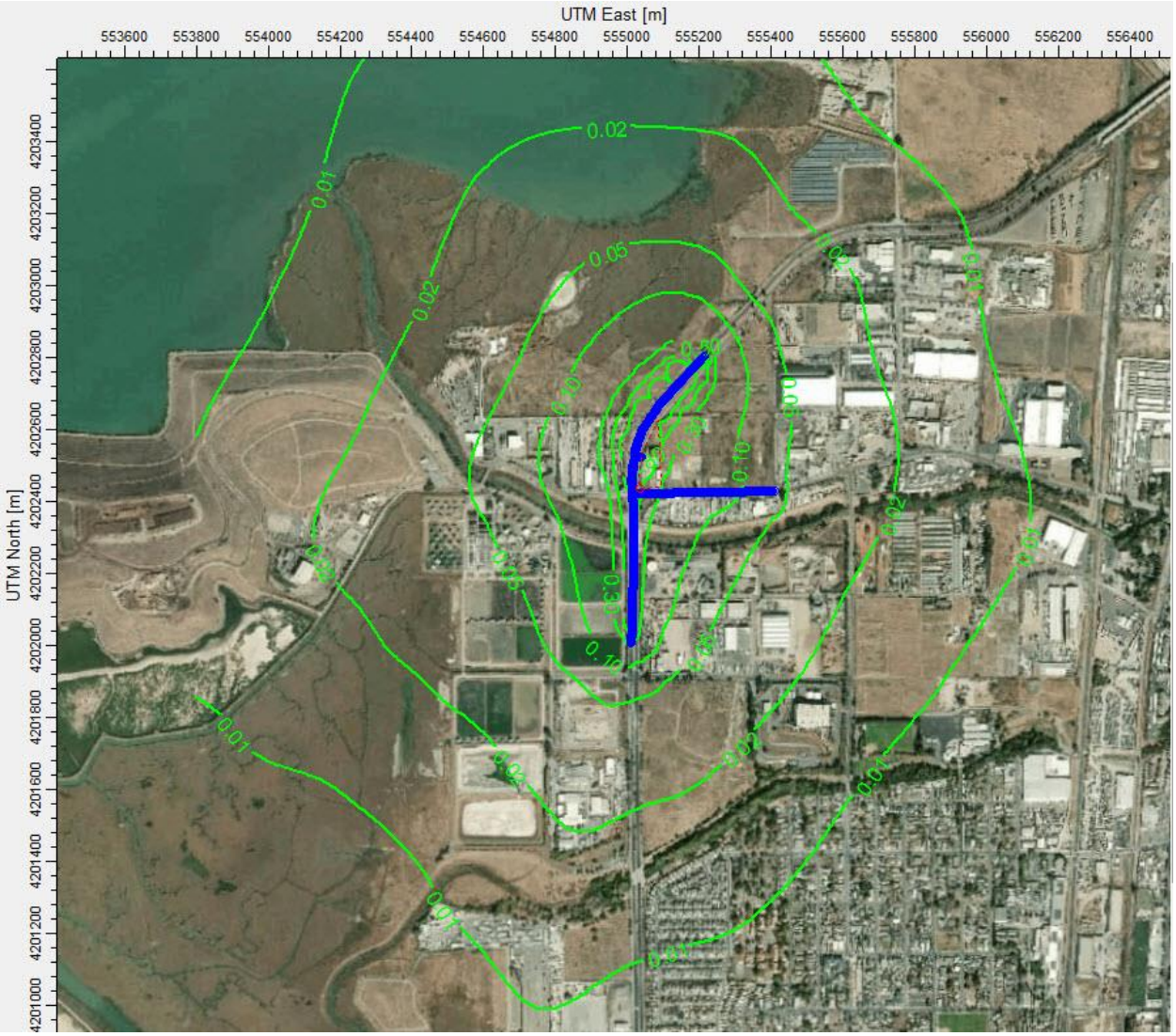
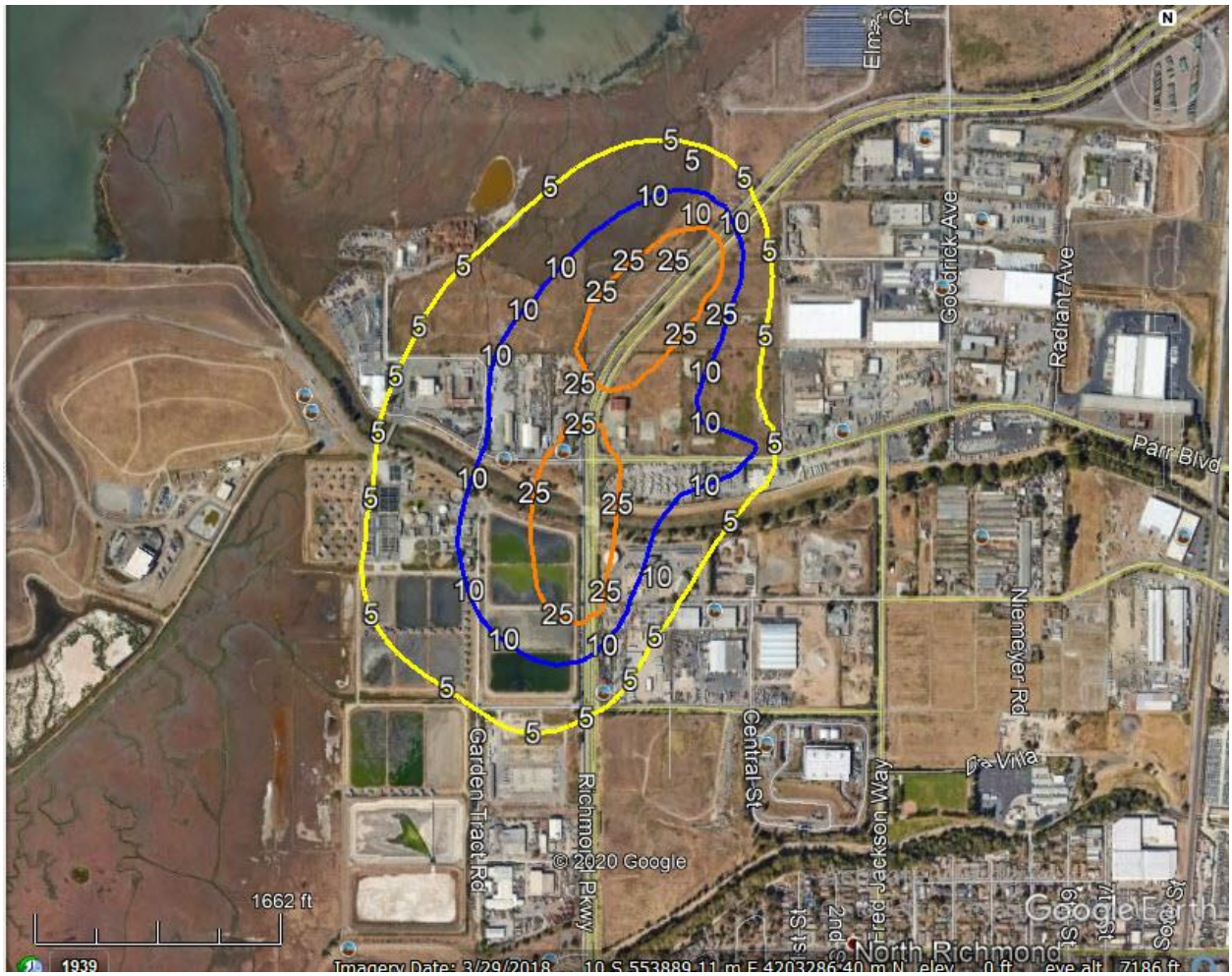


Figure 4-6
Spatial Variation of Background Residential Cancer Risk per Million



SECTION 5: RESULTS AND CONCLUSIONS

The results of the risk analysis are summarized in Table 5-1. They indicate that exposure to any TAC associated with the construction or operational phase would not result in a significant health impact.

Table 5-1
Summary of Maximum Health Risks at the Project Area

Risk Metric	Construction Phase	Operational (Occupancy) Phase	Significance Threshold	Significant?
Residential Cancer Risk	0.2 per million	1.76 per million	10 per million	No
Workplace Cancer Risk	0.344	3.66 per million	10 per million	No
Chronic Hazard Index	N/A	< 0.001	1.0	No
Acute Hazard Index	N/A	0.002	1.0	No
Annual PM-2.5 Concentration at Nearby Homes	N/A	0.015 ug/m3	0.3 ug/m3	No

The risk assessment process contains numerous, conservative assumption to ensure that public health risks are not underestimated. These assumptions are related to the exposure duration, toxicity data and use of Gaussian type statistical atmospheric dispersion models. For example, it is very unlikely any individual would remain at the same location for 30 years. As a result, this assumption substantially overstated the exposure and the health risks presented in this report.

SECTION 6: REFERENCES

BAAQMD (2017) "California Environmental Quality Act Air Quality Guidelines", Available at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

CalEPA (2012) "Technical Support Document for Exposure Assessment and Stochastic Analysis. Office of Environmental Health Hazard Assessment. California Environmental Protection Agency, August 2012.

CARB (2003) HARP User's Guide. Available at: http://www.arb.ca.gov/toxics/harp/harp.htm December 2003.

EPA (2004) "User's Guide for the AMS/EPA Regulatory Model – AERMOD". EPA Document No. EPA=454/B-03-001 September 2004.

OEHHA (2014) Consolidated Table of Approved health Risk Values. Cal EPA, Office of Environmental Health Hazard Assessment. Available at: file:///C:/2014%20Feather%20River%20AQMD/Hollycross%20Cemetary/OEHHA%20contable.pdf. July 3, 2014.

APPENDIX A

Summary of Construction Related Emissions

- CalEEMod Annual Construction Emissions
- Calculation of Off-Site Vehicular Emissions within 1,000 Feet

North Richmond Warehouse - Construction with Mitigation Measures

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	330.97	1000sqft	20.18	330,974.00	0
Parking Lot	401.45	1000sqft	9.22	401,446.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	5			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - This file is only for analysis of mitgated construction emissions. This file is not valid for other analyses.

Land Use - Quantities from 2/20/20 site plan.

Construction Phase - Construction schedule per Anderson pers. comm.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Demolition - Demoilition building square feet per Project Description.

Architectural Coating - Use architectural coatings with a VOC content of 28 g/L.

Vehicle Trips - Trip generation rate of 5.80 / KSF from Fehr & Peer 2020 and 2/20/20 site plan. Trip length per Fehr & Peers 2020. Apply seven days per week.

Area Coating - VOC content per BAAQMD Regulation 8.

Energy Use -

Construction Off-road Equipment Mitigation - Use Tier 4 (Final) construction equipment in demolition, site preparation, and grading phases of construction.

Area Mitigation -

Energy Mitigation - Title 24 2019 Standards per California Energy Commission 2018.

Fleet Mix - 69.79% LDA, 21.88% MDV, 8.33% HHD from Fehr & Peers 2020.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	28.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	28.00
tblArchitecturalCoating	EF_Parking	150.00	28.00
tblArchitecturalCoating	EF_Residential_Exterior	150.00	28.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	28.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	100
tblAreaCoating	Area_EF_Parking	150	100

tblAreaCoating	Area_EF_Residential_Exterior	150	100
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	18.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	30.00	15.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	45.00	22.00
tblConstructionPhase	NumDays	440.00	220.00
tblConstructionPhase	NumDays	35.00	17.00
tblConstructionPhase	NumDays	35.00	17.00
tblFleetMix	HHD	0.02	0.08
tblFleetMix	LDA	0.58	0.70
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.19	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.0830e-003	0.00
tblFleetMix	MCY	5.4540e-003	0.00
tblFleetMix	MDV	0.12	0.22
tblFleetMix	MH	8.7100e-004	0.00
tblFleetMix	MHD	0.01	0.00

tblFleetMix	OBUS	1.6050e-003	0.00
tblFleetMix	SBUS	2.7460e-003	0.00
tblFleetMix	UBUS	1.8100e-003	0.00
tblGrading	AcresOfGrading	110.00	112.50
tblLandUse	LandUseSquareFeet	330,970.00	330,974.00
tblLandUse	LandUseSquareFeet	401,450.00	401,446.00
tblLandUse	LotAcreage	7.60	20.18
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290

tblTripsAndVMT	WorkerTripNumber	30.00	15.00
tblTripsAndVMT	WorkerTripNumber	35.00	18.00
tblTripsAndVMT	WorkerTripNumber	40.00	20.00
tblTripsAndVMT	WorkerTripNumber	30.00	15.00
tblVehicleTrips	CC_TL	7.30	21.21
tblVehicleTrips	CNW_TL	7.30	21.21
tblVehicleTrips	CW_TL	9.50	21.21
tblVehicleTrips	ST_TR	1.68	5.80
tblVehicleTrips	SU_TR	1.68	5.80
tblVehicleTrips	WD_TR	1.68	5.80

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.7310	7.0353	5.8646	0.0141	0.7290	0.2973	1.0262	0.2745	0.2779	0.5525	0.0000	1,258.2074	1,258.2074	0.2041	0.0000	1,263.3107
2022	0.4954	0.3450	0.4190	8.1000e-004	0.0149	0.0161	0.0309	4.0100e-003	0.0150	0.0190	0.0000	71.7092	71.7092	0.0153	0.0000	72.0905
Maximum	**0.7310**	**7.0353**	**5.8646**	**0.0141**	**0.7290**	**0.2973**	**1.0262**	**0.2745**	**0.2779**	**0.5525**	**0.0000**	**1,258.2074**	**1,258.2074**	**0.2041**	**0.0000**	**1,263.3107**

Mitigated Construction

With Mitigation

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.5017	4.3298	5.9773	0.0141	0.7290	0.1562	0.8852	0.2745	0.1487	0.4232	0.0000	1,258.2065	1,258.2065	0.2041	0.0000	1,263.3099
2022	0.4934	0.3212	0.4206	8.1000e-004	0.0149	0.0147	0.0296	4.0100e-003	0.0138	0.0178	0.0000	71.7092	71.7092	0.0153	0.0000	72.0904
Maximum	**0.5017**	**4.3298**	**5.9773**	**0.0141**	**0.7290**	**0.1562**	**0.8852**	**0.2745**	**0.1487**	**0.4232**	**0.0000**	**1,258.2065**	**1,258.2065**	**0.2041**	**0.0000**	**1,263.3099**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**18.86**	**36.98**	**-1.82**	**0.00**	**0.00**	**45.46**	**13.47**	**0.00**	**44.55**	**22.84**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2021**	**3-31-2021**	2.5674	0.5680
2	**4-1-2021**	**6-30-2021**	1.7211	1.4002
3	**7-1-2021**	**9-30-2021**	1.7400	1.4156
4	**10-1-2021**	**12-31-2021**	1.7492	1.4248
5	**1-1-2022**	**3-31-2022**	0.8453	0.8146
		Highest	2.5674	1.4248

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4782	6.0000e-005	6.7600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Energy	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	208.0375	208.0375	0.0188	4.2500e-003	209.7735
Mobile	0.7374	8.9465	13.5079	0.0669	5.1337	0.0513	5.1850	1.3689	0.0481	1.4170	0.0000	6,192.1333	6,192.1333	0.1797	0.0000	6,196.6265
Waste						0.0000	0.0000		0.0000	0.0000	63.1525	0.0000	63.1525	3.7322	0.0000	156.4577
Water						0.0000	0.0000		0.0000	0.0000	24.2816	54.4768	78.7584	2.4994	0.0600	159.1278
Total	**2.2180**	**8.9691**	**13.5336**	**0.0671**	**5.1337**	**0.0530**	**5.1867**	**1.3689**	**0.0498**	**1.4187**	**87.4341**	**6,454.6607**	**6,542.0948**	**6.4302**	**0.0643**	**6,721.9994**

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	1.4782	6.0000e-005	6.7600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Energy	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	198.6505	198.6505	0.0184	4.0700e-003	200.3221
Mobile	0.7374	8.9465	13.5079	0.0669	5.1337	0.0513	5.1850	1.3689	0.0481	1.4170	0.0000	6,192.1333	6,192.1333	0.1797	0.0000	6,196.6265
Waste						0.0000	0.0000		0.0000	0.0000	63.1525	0.0000	63.1525	3.7322	0.0000	156.4577
Water						0.0000	0.0000		0.0000	0.0000	24.2816	54.4768	78.7584	2.4994	0.0600	159.1278
Total	**2.2174**	**8.9633**	**13.5287**	**0.0670**	**5.1337**	**0.0526**	**5.1863**	**1.3689**	**0.0494**	**1.4183**	**87.4341**	**6,445.2737**	**6,532.7078**	**6.4298**	**0.0641**	**6,712.5480**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.03**	**0.06**	**0.04**	**0.06**	**0.00**	**0.81**	**0.01**	**0.00**	**0.86**	**0.03**	**0.00**	**0.15**	**0.14**	**0.01**	**0.28**	**0.14**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2021	1/21/2021	5	15	
2	Site Preparation	Site Preparation	1/22/2021	2/4/2021	5	10	
3	Grading	Grading	2/5/2021	3/8/2021	5	22	
4	Building Construction	Building Construction	3/9/2021	1/10/2022	5	220	
5	Paving	Paving	1/11/2022	2/2/2022	5	17	
6	Architectural Coating	Architectural Coating	2/3/2022	2/25/2022	5	17	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 9.22

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 496,461; Non-Residential Outdoor: 165,487; Striped Parking Area: 24,087 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

North Richmond Warehouse - Construction with Mitigation Measures - Contra Costa County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	2	8.00	81	0.73
Demolition	Excavators	6	8.00	158	0.38
Demolition	Rubber Tired Dozers	4	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	6	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	8	8.00	97	0.37
Grading	Excavators	4	8.00	158	0.38
Grading	Graders	2	8.00	187	0.41
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	4	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Cranes	2	7.00	231	0.29
Building Construction	Forklifts	6	8.00	89	0.20
Building Construction	Generator Sets	2	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	6	7.00	97	0.37
Building Construction	Welders	2	8.00	46	0.45
Paving	Pavers	4	8.00	130	0.42
Paving	Paving Equipment	4	8.00	132	0.36
Paving	Rollers	4	8.00	80	0.38
Architectural Coating	Air Compressors	2	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	12	15.00	0.00	60.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	14	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	16	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	18	308.00	120.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	12	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	2	62.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.5000e-003	0.0000	6.5000e-003	9.8000e-004	0.0000	9.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0012	51.0012	0.0144	0.0000	51.3601
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**6.5000e-003**	**0.0233**	**0.0298**	**9.8000e-004**	**0.0216**	**0.0226**	**0.0000**	**51.0012**	**51.0012**	**0.0144**	**0.0000**	**51.3601**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3000e-004	8.0300e-003	1.5900e-003	2.0000e-005	5.1000e-004	3.0000e-005	5.3000e-004	1.4000e-004	2.0000e-005	1.6000e-004	0.0000	2.2468	2.2468	1.0000e-004	0.0000	2.2492
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.5800e-003	1.0000e-005	8.9000e-004	1.0000e-005	9.0000e-004	2.4000e-004	1.0000e-005	2.4000e-004	0.0000	0.7550	0.7550	2.0000e-005	0.0000	0.7554
Total	**5.8000e-004**	**8.2700e-003**	**4.1700e-003**	**3.0000e-005**	**1.4000e-003**	**4.0000e-005**	**1.4300e-003**	**3.8000e-004**	**3.0000e-005**	**4.0000e-004**	**0.0000**	**3.0018**	**3.0018**	**1.2000e-004**	**0.0000**	**3.0047**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.5000e-003	0.0000	6.5000e-003	9.8000e-004	0.0000	9.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0118	0.0716	0.3464	5.8000e-004		3.4000e-003	3.4000e-003		3.4000e-003	3.4000e-003	0.0000	51.0011	51.0011	0.0144	0.0000	51.3600
Total	**0.0118**	**0.0716**	**0.3464**	**5.8000e-004**	**6.5000e-003**	**3.4000e-003**	**9.9000e-003**	**9.8000e-004**	**3.4000e-003**	**4.3800e-003**	**0.0000**	**51.0011**	**51.0011**	**0.0144**	**0.0000**	**51.3600**

3.2 Demolition - 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	2.3000e-004	8.0300e-003	1.5900e-003	2.0000e-005	5.1000e-004	3.0000e-005	5.3000e-004	1.4000e-004	2.0000e-005	1.6000e-004	0.0000	2.2468	2.2468	1.0000e-004	0.0000	2.2492
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.5800e-003	1.0000e-005	8.9000e-004	1.0000e-005	9.0000e-004	2.4000e-004	1.0000e-005	2.4000e-004	0.0000	0.7550	0.7550	2.0000e-005	0.0000	0.7554
Total	**5.8000e-004**	**8.2700e-003**	**4.1700e-003**	**3.0000e-005**	**1.4000e-003**	**4.0000e-005**	**1.4300e-003**	**3.8000e-004**	**3.0000e-005**	**4.0000e-004**	**0.0000**	**3.0018**	**3.0018**	**1.2000e-004**	**0.0000**	**3.0047**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

Table A-1
Calculation Off-Site Emissions from
Truck Travel within 1,000 feet (0.19 Miles) of Project

Emissions from Trucks		Segment 1 South on Richmond Pkwy	Segment 2 North on Richmond Pkwy	Segment 3 East on Parr Bld
Percent of Total ==>		67%	30%	3%
HD Truck Vehicle Count				
Daily	*(truck trips/day)*	80	36	4
Annual	*(truck trips/yr)*	29,346	13,140	1,314
Emission Factors (PM-2.5)				
Vehicle Exhaust (Note 1)	*(grams/mile)*	0.019	0.019	0.019
Total		0.0	0.0	0.0
Distance Travelled				
1 Truck Trip	*(mile/truck trip)*	0.19	0.19	0.19
All Truck Trips	*(total miles/yr)*	5,576	2,497	250

Notes:
1. Emissions based on EMFAC 2017 for CY 2022 aggregate speed and model years
2. Daily vehicle count: 120 HD trucks/day

Ref: Per E-Mail from KD Anderson Oct 5, 2020

Table A-2
Calculation of Off-Site Emissions from Light Duty Vehicles

No. of Vehicles per Day	308	veh/day total
From KD Anderson Oct 5, 2020	112,420	veh/yr total
	56,210	veh/yr per 0.19 mile segment
Length of Roadway (1,000 ft)	0.19	mile
Annual Miles per Roadway Segment	10,680	miles/yr per 0.25 mile segment

	EF	Emission Rate (Vehicle Travel)			Emission Rate (vehicle travel + idle + start-up/shut down)	Segment 1 (lbs/yr)	Segment 2 (lbs/yr)	Segment 3 (lbs/yr)
TAC	(mg/mile)	(mg/yr)	(g/yr)	(lb/yr)	(lb/yr)	South on Richmond Pkwy	North on Richmond Pkwy	East on Parr Bld
						67%	30%	3%
1,3 Butadiene	4.48	47,846	47.846	0.105	0.1581	0.106	0.0474	0.00474
Benzene	45.28	483,586	483.586	1.065	2.1303	1.427	0.6391	0.06391
Formaldehyde	12.87	137,450	137.450	0.303	0.6055	0.406	0.1817	0.01817
Acetaldehyde	2.77	29,583	29.583	0.065	0.1303	0.087	0.0391	0.00391

NOTES
1. Emission Factors From: Zhu, Durbin, Norbeck and Cocker (July 2004)
"Internal Combustion Engine (ICE) Air Toxic Emissions"
Final Report to Research Division CARB, Sacramento, CA
2. Emissions from Vehicle Idle + start-up and shut-down estimated to equal 50% of emissions from vehicle travel
3. Lbs/hr = [lbs/yr] / [2,080 hrs/yr] Assumes 8hr/day construction 5 days per week

Segment 1 (lbs/hr)	Segment 2 (lbs/hr)	Segment 3 (lbs/hr)
67%	30%	3%
5.09E-05	2.28E-05	2.28E-06
6.86E-04	3.07E-04	3.07E-05
1.95E-04	8.73E-05	8.73E-06
4.20E-05	1.88E-05	1.88E-06

APPENDIX B

Traffic Data

Source: Fehr & Peers Traffic Engineers

Table 6: Project VMT Generated

Vehicle Type	Daily Trips[1]	Average Distance (One-Way)	VMT
Building 1 – Warehouse/Distribution Uses			
Automobiles	115	20.53	2,361
Heavy Vehicles	55	28.61	1,574
Total – Building 1 (Rounded)	**170**	--	**3,940**
Building 2 – Parcel Distribution Center			
Automobiles	1,220	20.53	25,050
Package and Delivery Vans	420	20.53	8,624
Spot Trailers	60	28.61	1,716
Linehauls	50	28.61	1,430
Total – Building 2 (Rounded)	**1,750**	**--**	**36,820**
Total Scannell Project	**1,920**	**--**	**40,760**

APPENDIX C

Detailed Emission Calculations

Table C-1
Calculation of On-Site PM-2.5 (DPM) Emissions

IDLING EMISSIONS	Units	
HD Trucks Count	*(trucks/day)*	165
Emission Factor for Vehicle Idling (Note 1)	*(grams/vehicle-day)*	0.004595
Emissions from Truck Idling		
Per truck	*(grams/truck)*	4.60E-03
All Trucks (per day)	*(grams/day)*	7.58E-01
All Trucks (per year)	*(grams/year)*	276.75
	(lbs/yr)	0.610

EMISSIONS FROM On-Site Truck Movement	Units	
Daily Truck Volume	*(trucks/day)*	165
Distrance Travelled On-Site		
1 Truck	*(mile/truck)*	0.10
All Trucks/day	*(miles/day)*	16.50
All Trucks (per year)	*(miles/yr)*	6,023
Emission Factor (EMFAC 2017 for HD Trucks CY 2026)	*(gram/mile)*	0.01901
Emissions		
1 Truck (per mile)	*(grams/mile)*	0.01901
All Trucks (per day)	*(grams/day)*	0.31364
All Trucks (per year)	*(grams/yr)*	114.48
	(lbs/yr)	0.252

EMISSIONS FROM SERVICE VEHICLES	Units	
Average Annual Exhaust Emissions PM-2.5 (Scenario 1)	*(tons/yr)*	0.027800
	(lbs/yr)	55.6
Averaged Over 2021, 2023, 2025 and 2027 Ref: Table 13 AQ Study		
Total	*(lbs/yr)*	55.600
TOTAL On-Site (Idling +On-Site Move't+Service Vehicles)	*(lbs/yr)*	56.10

Notes

Table C-2
Calculation of Off-Site Truck Emissions

Emissions from Trucks		Segment 1 South on Richmond Pkwy	Segment 2 North on Richmond Pkwy	Segment 3 East on Parr Bld
Percent of Total		67%	30%	3%
HD Truck Vehicle Count				
Daily	*(truck trips/day)*	111	50	5
Annual	*(truck trips/yr)*	40,351	18,068	1,807
Emission Factors (PM-2.5)				
Brake+TireWear (Note 2)	*(grams/mile)*	0.0589	0.0589	0.0589
Re-suspension of Road Dust (Note 3)	*(grams/mile)*	17.77	17.77	17.77
Total		17.8	17.8	17.8
Distance Travelled				
1 Truck Trip	*(mile/truck trip)*	0.19	0.19	0.19
All Truck Trips	*(total miles/yr)*	7,667	3,433	343
Emissions (Brake + Tire)	*(grams/yr)*	136,705	61,211	6,121
	(lbs/yr)	301.11	134.83	13.48

Notes:
1. Emissions based on EMFAC 2017 for CY 2022 aggregate speed and model years
2. Daily vehicle count: 165 HD trucks/day
3. Emissions Model: Ref: AP-42 Section 13.2.1 January 2011

$$E = k\,(sL/2)^{0.65}\,(W/3)^{1.5} \qquad (2\text{-}5)$$

where:
- E = particulate emission factor (having units matching the units of k)
- k = particle size multiplier for particle size range and units of interest (see below),
- sL = road surface silt loading (grams per square meter) (g/m2), and
- W = average weight (tons) of the vehicles traveling the road.

The selection of the value for the independent variable for the particle size multiplier was based upon the units of the emissions factor desired and the size range for the emissions.

Particle Size Multipliers for Paved Road Equation

Size Range	Multiplier k		
	g/VKT	g/VMT	lb/VMT
$PM_{2.5}$	2.1	3.3	0.0073
PM_{10}	4.6	7.3	0.016
PM_{15}	5.5	9.0	0.020
PM_{30}	24	38	0.082

Model input Values:

k	3.3	g/VMT
sL	0.2	g/m2
W	25	tons/vehicle
E=	17.772	g/VMT

Table C-3
Calculation of Toxic Emissions from Automobile Traffic within 0.19 mile of Project Site

No. of Vehicles per Day	1,335	veh/day total
	487,275	veh/yr total
	243,638	veh/yr per 0.25 mile segment
Length of Roadway	0.19	mile
Annual Miles per Roadway Segment	46,291	miles/yr per 0.19 mile segment

	EF	Emission Rate (Vehicle Travel)			Emission Rate (vehicle travel + idle + start-up/shut down)
TAC	(mg/mile)	(mg/yr)	(g/yr)	(lb/yr)	(lb/yr)
1,3 Butadiene	4.48	207,384	207.384	0.457	0.6852
Benzene	45.28	2,096,062	2096.062	4.617	9.2338
Formaldehyde	12.87	595,767	595.767	1.312	2.6245
Acetaldehyde	2.77	128,226	128.226	0.282	0.5649

NOTES

1. Emission Factors From: Zhu, Durbin, Norbeck and Cocker (July 2004)
"Internal Combustion Engine (ICE) Air Toxic Emissions"
Final Report to Research Division CARB, Sacramento, CA

2. Traffic volume based on estimates in ITE Trip Generation Rates (10th Ed) for Land Use 945
"Gasoline/Service Station with Convenience Market"

3. Emissions from Vehicle Idle + start-up and shut-down estimated to equal 50% of emissions from vehicle travel

Table C-4

Calculation of DPM Emissions from
Truck Travel within 0.19 Miles of Project

Emissions from Trucks		Segment 1	Segment 2	Segment 3
		South on Richmond Pkwy	North on Richmond Pkwy	East on Parr Bld
Percent of Total		67%	30%	3%
HD Truck Vehicle Count				
Daily	*(truck trips/day)*	111	50	5
Annual	*(truck trips/yr)*	40,351	18,068	1,807
Emission Factor for Vehicle Movement (Note 1)	*(grams/mile)*	0.0190	0.0190	0.0190
Distance Travelled				
1 Truck Trip	*(mile/truck trip)*	0.25	0.25	0.25
All Truck Trips	*(total miles/yr)*	10,088	4,517	452
Emissions of DPM	*(grams/yr)*	192	86	9
	(lbs/yr)	0.422	0.19	0.02

Notes:
1. Emissions based on EMFAC 2017 for CY 2022 aggregate speed and model years
2. Daily vehicle count: 165 HD trucks/day

APPENDIX D

Excerpts of AERMOD Model Report

```
**
****************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.8.3
** Lakes Environmental Software Inc.
** Date: 5/16/2020
** File: C:\Lakes\AERMOD View\PAR1_CONST\PAR1_CONST.ADI
**
****************************************
**
**
****************************************
** AERMOD Control Pathway
****************************************
**
**
CO STARTING
   TITLEONE C:\Lakes\AERMOD View\PAR1_CONST\PAR1_CONST.isc
   TITLETWO Construction Phase 1 Poly Area Source - Plot Files Export to HARP
   MODELOPT DFAULT CONC
   AVERTIME 1 PERIOD
   POLLUTID DPM
   RUNORNOT RUN
   ERRORFIL PAR1_CONST.err
CO FINISHED
**
****************************************
** AERMOD Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   555034.977  4202438.311        2.100
** DESCRSRC Main Project Area
** Source Parameters **
   SRCPARAM PAREA1        0.000129     5.000         6
   AREAVERT PAREA1       555034.977 4202438.311 555094.922 4202441.641
   AREAVERT PAREA1       555085.764 4202626.473 555050.796 4202558.202
   AREAVERT PAREA1       555039.140 4202519.903 555031.647 4202478.274
   SRCGROUP PAREA1   PAREA1
   SRCGROUP ALL
SO FINISHED
**
****************************************
** AERMOD Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED PAR1_CONST.rou
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
```

```
**
ME STARTING
   SURFFILE ..\chev13_17.sfc
   PROFFILE ..\chev13_17.pfl
   SURFDATA 23230 2013 OAKLAND/WSO_AP
   UAIRDATA 23230 2013 OAKLAND/WSO_AP
   SITEDATA 2703 2013
   PROFBASE 1.5 METERS
   STARTEND 2017 1 1 1 2017 12 31 24
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 PAREA1 1ST PAR1_CONST.AD\01H1G001.PLT 31
   PLOTFILE 1 ALL 1ST PAR1_CONST.AD\01H1GALL.PLT 32
   PLOTFILE PERIOD PAREA1 PAR1_CONST.AD\PE00G000.PLT 33
   PLOTFILE PERIOD ALL PAR1_CONST.AD\PE00GALL.PLT 34
   SUMMFILE PAR1_CONST.sum
OU FINISHED


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

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

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


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


    ********   WARNING MESSAGES   ********
 MX W403      69       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data

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

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

- - - -

b for Both Calm and Missing Hours

```
**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     1.50 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      4.1 MB of RAM.

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

**Detailed Error/Message File:   PAR1_CONST.err
**File for Summary of Results:   PAR1_CONST.sum
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
PAREA1	0	0.12900E-03	555035.0	4202438.3	2.1	5.00	6	0.00	NO	

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
PAREA1	PAREA1 ,
ALL	PAREA1 ,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

*** X-COORDINATES OF GRID ***
(METERS)

553801.5,	553851.5,	553901.5,	553951.5,	554001.5,	554051.5,	554101.5,	554151.5,	554201.5,	554251.5,
554301.5,	554351.5,	554401.5,	554451.5,	554501.5,	554551.5,	554601.5,	554651.5,	554701.5,	554751.5,
554801.5,	554851.5,	554901.5,	554951.5,	555001.5,	555051.5,	555101.5,	555151.5,	555201.5,	555251.5,
555301.5,	555351.5,	555401.5,	555451.5,	555501.5,	555551.5,	555601.5,	555651.5,	555701.5,	555751.5,
555801.5,	555851.5,	555901.5,	555951.5,	556001.5,	556051.5,	556101.5,	556151.5,	556201.5,	556251.5,
556301.5,	556351.5,	556401.5,	556451.5,	556501.5,	556551.5,	556601.5,	556651.5,	556701.5,	556751.5,

*** Y-COORDINATES OF GRID ***
(METERS)

4200702.0,	4200752.0,	4200802.0,	4200852.0,	4200902.0,	4200952.0,	4201002.0,	4201052.0,	4201102.0,	4201152.0,
4201202.0,	4201252.0,	4201302.0,	4201352.0,	4201402.0,	4201452.0,	4201502.0,	4201552.0,	4201602.0,	4201652.0,
4201702.0,	4201752.0,	4201802.0,	4201852.0,	4201902.0,	4201952.0,	4202002.0,	4202052.0,	4202102.0,	4202152.0,
4202202.0,	4202252.0,	4202302.0,	4202352.0,	4202402.0,	4202452.0,	4202502.0,	4202552.0,	4202602.0,	4202652.0,
4202702.0,	4202752.0,	4202802.0,	4202852.0,	4202902.0,	4202952.0,	4203002.0,	4203052.0,	4203102.0,	4203152.0,
4203202.0,	4203252.0,	4203302.0,	4203352.0,	4203402.0,	4203452.0,	4203502.0,	4203552.0,	4203602.0,	4203652.0,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

* HILL HEIGHT SCALES IN METERS *

Y-COORD (METERS)	X-COORD (METERS) 556501.48	556551.48	556601.48	556651.48	556701.48	556751.48
4201652.04	9.00	9.00	9.80	10.30	11.00	11.00
4201602.04	8.90	9.00	10.00	10.30	11.00	11.00
4201552.04	8.90	9.80	10.00	10.00	10.90	11.00
4201502.04	9.00	9.90	10.00	10.00	10.90	11.00
4201452.04	9.30	10.00	10.00	10.00	10.00	11.00
4201402.04	9.90	10.00	10.00	10.00	10.00	11.00
4201352.04	10.00	10.00	10.00	10.00	10.00	10.60
4201302.04	10.00	10.00	10.00	10.00	10.00	10.60
4201252.04	10.00	10.00	10.00	10.00	10.00	10.90
4201202.04	10.00	10.00	10.00	10.10	11.00	11.00
4201152.04	10.00	10.00	10.10	10.40	11.00	11.10
4201102.04	10.20	10.80	10.90	11.00	11.00	11.60
4201052.04	11.00	11.00	11.00	11.10	12.00	12.00
4201002.04	11.00	11.00	11.10	12.00	12.00	12.10
4200952.04	11.00	11.80	12.00	12.00	12.00	12.90
4200902.04	11.60	12.00	12.00	12.60	13.00	13.00
4200852.04	12.00	12.10	13.00	13.00	13.00	13.10
4200802.04	12.20	13.00	13.00	13.20	13.80	14.00
4200752.04	12.30	13.00	13.00	14.00	14.00	14.00
4200702.04	12.30	13.00	13.00	13.90	14.00	14.00

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

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

```
( 554960.8, 4202465.2,       2.0,       2.0,       0.0);         ( 554889.4, 4202471.7,       2.0,       2.0,       0.0);
( 555317.9, 4202392.1,       3.0,       3.0,       0.0);
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

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

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1
```

METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2017 1 1 1
AND END DATE: 2017 12 31 24

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

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

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

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

Surface file: ..\chev13_17.sfc Met Version: 18081
Profile file: ..\chev13_17.pfl
Surface format: FREE
Profile format: FREE
Surface station no.: 23230 Upper air station no.: 23230
Name: OAKLAND/WSO_AP Name: OAKLAND/WSO_AP
Year: 2013 Year: 2013

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
13	01	01	1	01	-6.3	0.084	-9.000	-9.000	-999.	58.	8.4	0.17	0.63	1.00	1.70	173.	10.0	279.9	8.8
13	01	01	1	02	-9.2	0.134	-9.000	-9.000	-999.	117.	23.7	0.15	0.63	1.00	2.10	93.	10.0	278.4	8.8
13	01	01	1	03	-6.5	0.086	-9.000	-9.000	-999.	61.	9.0	0.15	0.63	1.00	1.80	63.	10.0	278.4	8.8
13	01	01	1	04	-11.3	0.164	-9.000	-9.000	-999.	160.	35.8	0.19	0.63	1.00	2.20	25.	10.0	278.5	8.8
13	01	01	1	05	-15.9	0.232	-9.000	-9.000	-999.	268.	71.3	0.19	0.63	1.00	2.70	43.	10.0	278.8	8.8
13	01	01	1	06	-25.3	0.368	-9.000	-9.000	-999.	537.	180.2	0.15	0.63	1.00	4.10	72.	10.0	278.9	8.8
13	01	01	1	07	-24.5	0.242	-9.000	-9.000	-999.	296.	52.9	0.15	0.63	1.00	3.10	64.	10.0	278.5	8.8
13	01	01	1	08	-28.7	0.284	-9.000	-9.000	-999.	363.	72.7	0.19	0.63	1.00	3.30	56.	10.0	278.1	8.8
13	01	01	1	09	1.9	0.246	0.106	0.005	23.	293.	-724.2	0.19	0.63	0.38	2.40	49.	10.0	278.5	8.8
13	01	01	1	10	39.2	0.414	0.490	0.007	109.	639.	-164.7	0.19	0.63	0.25	3.90	42.	10.0	279.9	8.8
13	01	01	1	11	68.1	0.405	0.767	0.007	241.	619.	-88.9	0.19	0.63	0.20	3.70	26.	10.0	280.8	8.8
13	01	01	1	12	84.6	0.456	1.112	0.008	592.	738.	-102.1	0.19	0.63	0.19	4.20	26.	10.0	281.6	8.8
13	01	01	1	13	87.7	0.532	1.277	0.007	865.	929.	-156.0	0.19	0.63	0.18	5.00	50.	10.0	282.8	8.8
13	01	01	1	14	77.3	0.596	1.242	0.005	903.	1103.	-249.4	0.19	0.63	0.19	5.70	58.	10.0	283.8	8.8
13	01	01	1	15	53.8	0.729	1.108	0.005	920.	1489.	-653.8	0.15	0.63	0.22	7.50	62.	10.0	284.4	8.8
13	01	01	1	16	19.4	0.459	0.790	0.007	925.	827.	-454.5	0.15	0.63	0.31	4.70	72.	10.0	284.4	8.8
13	01	01	1	17	-32.5	0.383	-9.000	-9.000	-999.	578.	157.6	0.15	0.63	0.54	4.30	78.	10.0	283.9	8.8
13	01	01	1	18	-22.8	0.210	-9.000	-9.000	-999.	256.	36.9	0.15	0.63	1.00	2.90	99.	10.0	282.6	8.8
13	01	01	1	19	-12.8	0.118	-9.000	-9.000	-999.	103.	11.7	0.17	0.63	1.00	2.40	124.	10.0	281.8	8.8
13	01	01	1	20	-1.7	0.043	-9.000	-9.000	-999.	25.	4.2	0.15	0.63	1.00	0.90	336.	10.0	281.1	8.8
13	01	01	1	21	-2.6	0.053	-9.000	-9.000	-999.	29.	5.2	0.15	0.63	1.00	1.10	304.	10.0	281.2	8.8
13	01	01	1	22	-5.5	0.077	-9.000	-9.000	-999.	51.	7.5	0.15	0.63	1.00	1.60	94.	10.0	280.6	8.8
13	01	01	1	23	-3.4	0.061	-9.000	-9.000	-999.	36.	6.1	0.19	0.63	1.00	1.20	19.	10.0	279.0	8.8
13	01	01	1	24	-6.7	0.086	-9.000	-9.000	-999.	60.	8.6	0.19	0.63	1.00	1.70	30.	10.0	278.2	8.8

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
13	01	01	01	8.8	0	-999.	-99.00	280.0	999.0	-99.00	-99.00
13	01	01	01	10.0	1	173.	1.70	-999.0	25.2	-99.00	0.68

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

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE PERIOD (8760 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 553801.48	553851.48	553901.48	553951.48	554001.48	554051.48	554101.48	554151.48	554201.48
4203652.04	0.95535	0.99603	1.03834	1.08244	1.12847	1.17666	1.22706	1.27936	1.33288
4203602.04	0.97954	1.02327	1.06902	1.11683	1.16671	1.21894	1.27366	1.33086	1.39009
4203552.04	1.00350	1.05005	1.09927	1.15101	1.20527	1.26203	1.32159	1.38408	1.44938
4203502.04	1.02780	1.07662	1.12901	1.18468	1.24346	1.30542	1.37046	1.43885	1.51063
4203452.04	1.05374	1.10389	1.15868	1.21784	1.28115	1.34841	1.41953	1.49450	1.57354
4203402.04	1.08253	1.13333	1.18944	1.25118	1.31843	1.39083	1.46815	1.55041	1.63750
4203352.04	1.11584	1.16650	1.22315	1.28628	1.35616	1.43289	1.51614	1.60573	1.71094
4203302.04	1.15490	1.20530	1.26176	1.32524	1.39648	1.47596	1.56522	1.67251	1.77794
4203252.04	1.20058	1.25109	1.30734	1.37061	1.44208	1.52408	1.62618	1.72881	1.84236
4203202.04	1.25268	1.30451	1.36140	1.42469	1.49594	1.58473	1.68263	1.78835	1.90788
4203152.04	1.31050	1.36507	1.42416	1.48885	1.56067	1.65032	1.74884	1.85585	1.97852
4203102.04	1.37280	1.43175	1.49480	1.56287	1.63729	1.73507	1.82917	1.93657	2.06039
4203052.04	1.43843	1.50306	1.57189	1.64562	1.72512	1.82867	1.92602	2.03539	2.16030
4203002.04	1.50731	1.57825	1.65407	1.73519	1.82947	1.93503	2.03921	2.15413	2.28309
4202952.04	1.58099	1.65819	1.74131	1.83085	1.92735	2.05190	2.16664	2.29190	2.43006
4202902.04	1.66202	1.74539	1.83587	1.93390	2.04033	2.17838	2.30632	2.44601	2.59909
4202852.04	1.75268	1.84270	1.94067	2.04742	2.16415	2.31636	2.45894	2.61554	2.78774
4202802.04	1.86758	1.96855	2.07705	2.19585	2.32623	2.46955	2.62766	2.80272	2.99678
4202752.04	1.95983	2.07132	2.20569	2.33657	2.48045	2.63925	2.81524	3.01080	3.22930
4202702.04	2.06872	2.19777	2.33941	2.48444	2.64445	2.82153	3.01845	3.23838	3.48519
4202652.04	2.17496	2.32474	2.47203	2.63228	2.81005	3.00771	3.22834	3.47608	3.75566
4202602.04	2.27978	2.43943	2.59785	2.77358	2.96911	3.18773	3.43323	3.71037	4.02515
4202552.04	2.37971	2.54178	2.71252	2.90257	3.11480	3.35316	3.62229	3.92785	4.27688
4202502.04	2.46812	2.63120	2.81264	3.01531	3.24242	3.49832	3.78850	4.11954	4.45599
4202452.04	2.53594	2.70690	2.89748	3.11093	3.35107	3.62253	3.93132	4.28522	4.68125
4202402.04	2.59384	2.77219	2.97146	3.19508	3.44753	3.73408	4.06088	4.41461	4.83915
4202352.04	2.64958	2.83601	3.04468	3.27958	3.54518	3.80270	4.14093	4.52918	4.97751
4202302.04	2.71215	2.90753	3.12656	3.37310	3.65129	3.92127	4.27270	4.67353	5.13177
4202252.04	2.78441	2.98790	3.21482	3.46910	3.75356	4.02594	4.37654	4.76905	5.20752
4202202.04	2.85694	3.06330	3.29098	3.54220	3.81895	4.07634	4.40260	4.75779	5.14942
4202152.04	2.89525	3.10986	3.32643	3.56023	3.81186	4.07221	4.31457	4.60891	4.98116
4202102.04	2.92300	3.10537	3.27995	3.47746	3.71379	3.93421	4.15661	4.39298	4.62917
4202052.04	2.88275	3.03659	3.17976	3.36580	3.53416	3.70486	3.87703	4.05108	4.22868
4202002.04	2.77026	2.89006	3.03079	3.17300	3.30227	3.43241	3.56441	3.70038	3.84348
4201952.04	2.64264	2.75291	2.85259	2.95237	3.05314	3.15660	3.26480	3.38046	3.50730
4201902.04	2.49316	2.57151	2.65053	2.73119	2.81494	2.90385	3.00032	3.10717	3.22645
4201852.04	2.32680	2.39105	2.45755	2.52751	2.60263	2.68507	2.77661	2.87867	2.99227
4201802.04	2.16800	2.22413	2.28406	2.34915	2.42077	2.50016	2.58849	2.68584	2.79170
4201752.04	2.02432	2.07654	2.13365	2.19671	2.26643	2.34341	2.42742	2.51798	2.61422
4201702.04	1.89831	1.94906	2.00492	2.06665	2.13425	2.20729	2.28516	2.36729	2.45348

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE PERIOD (8760 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 553801.48	553851.48	553901.48	553951.48	554001.48	554051.48	554101.48	554151.48	554201.48
4201652.04	1.78955	1.83952	1.89435	1.95393	2.01783	2.08529	2.15588	2.22944	2.30717
4201602.04	1.69553	1.74455	1.79738	1.85350	1.91225	1.97323	2.03653	2.10298	2.17517
4201552.04	1.61331	1.66033	1.70991	1.76137	1.81431	1.86906	1.92633	1.98831	2.05761
4201502.04	1.53954	1.58351	1.62881	1.67512	1.72270	1.77236	1.82594	1.88566	1.95426
4201452.04	1.47161	1.51164	1.55230	1.59395	1.63731	1.68384	1.73558	1.79480	1.86378
4201402.04	1.40746	1.44336	1.48000	1.51804	1.55872	1.60388	1.65526	1.71487	1.78461
4201352.04	1.34624	1.37863	1.41217	1.44801	1.48757	1.53247	1.58435	1.64478	1.71447
4201302.04	1.28795	1.31766	1.34940	1.38423	1.42360	1.46910	1.52183	1.58265	1.65187
4201252.04	1.23288	1.26104	1.29190	1.32682	1.36679	1.41302	1.46641	1.52706	1.59516
4201202.04	1.18160	1.20905	1.24010	1.27551	1.31629	1.36322	1.41666	1.47669	1.54301
4201152.04	1.13440	1.16209	1.19366	1.22987	1.27143	1.31863	1.37168	1.43040	1.49438
4201102.04	1.09167	1.11986	1.15219	1.18914	1.23118	1.27825	1.33040	1.38728	1.44857
4201052.04	1.05309	1.08195	1.11503	1.15247	1.19459	1.24112	1.29208	1.34691	1.40522
4201002.04	1.01849	1.04808	1.08163	1.11930	1.16100	1.20658	1.25587	1.30854	1.36352
4200952.04	0.98738	1.01754	1.05135	1.08895	1.13001	1.17432	1.22178	1.27192	1.32362
4200902.04	0.95934	0.98975	1.02365	1.06062	1.10073	1.14371	1.18918	1.23633	1.28497
4200852.04	0.93388	0.96445	0.99804	1.03426	1.07319	1.11465	1.15784	1.20222	1.24738
4200802.04	0.91055	0.94096	0.97398	1.00933	1.04692	1.08650	1.12725	1.16912	1.20793
4200752.04	0.88571	0.91710	0.94934	0.98348	1.01964	1.05709	1.09473	1.13416	1.17530
4200702.04	0.86894	0.89826	0.92928	0.96286	0.99756	1.03293	1.06924	1.10534	1.13849

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE PERIOD (8760 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 554251.48	554301.48	554351.48	554401.48	554451.48	554501.48	554551.48	554601.48	554651.48
4203652.04	1.38652	1.43845	1.48628	1.52763	1.56075	1.58496	1.59995	1.60605	1.60320
4203602.04	1.45034	1.51016	1.56715	1.61837	1.66132	1.69449	1.71716	1.72934	1.73118
4203552.04	1.51674	1.58480	1.65159	1.71390	1.76848	1.81268	1.84519	1.86549	1.87365
4203502.04	1.58555	1.66251	1.73963	1.81426	1.88224	1.94001	1.98501	2.01595	2.03262
4203452.04	1.65659	1.74311	1.83154	1.91930	2.00255	2.07652	2.13713	2.18200	2.21015
4203402.04	1.72955	1.82640	1.92706	2.02919	2.12936	2.22217	2.30200	2.36491	2.40846
4203352.04	1.81354	1.92220	2.03665	2.15505	2.27423	2.37675	2.48004	2.56583	2.62987
4203302.04	1.89144	2.01294	2.14217	2.27810	2.41812	2.55767	2.68752	2.79537	2.87667
4203252.04	1.96662	2.10145	2.24675	2.40180	2.56484	2.73187	2.89578	3.04657	3.17365
4203202.04	2.04147	2.18943	2.35135	2.52708	2.71539	2.91319	3.11429	3.30803	3.48086
4203152.04	2.11870	2.27741	2.45526	2.65209	2.86748	3.09941	3.34267	3.58733	3.81782
4203102.04	2.20382	2.36970	2.56010	2.77641	3.01903	3.28713	3.57737	3.88118	4.18245
4203052.04	2.30505	2.47418	2.67231	2.90336	3.16997	3.47378	3.81355	4.18371	4.56983
4203002.04	2.43036	2.60161	2.80325	3.04268	3.32668	3.66051	4.04802	4.48771	4.97043
4202952.04	2.58481	2.76126	2.96682	3.21072	3.50406	3.85831	4.28396	4.78868	5.37249
4202902.04	2.76824	2.95758	3.17345	3.42511	3.72538	4.09097	4.54084	5.09516	5.77019
4202852.04	2.97798	3.18919	3.42631	3.69695	4.01262	4.39080	4.85634	5.44089	6.18173
4202802.04	3.21252	3.45313	3.72285	4.02766	4.37676	4.78469	5.27534	5.88532	6.66739
4202752.04	3.47402	3.74944	4.06046	4.41341	4.81660	5.28229	5.82964	6.49144	7.32186
4202702.04	3.76345	4.07889	4.43848	4.85071	5.32588	5.87743	6.52368	7.29285	8.23125
4202652.04	4.07287	4.43505	4.85117	5.33276	5.89446	6.55482	7.33827	8.27736	9.41867
4202602.04	4.37240	4.73663	5.25138	5.83802	6.49897	7.28641	8.23528	9.39315	10.82550
4202552.04	4.60694	5.05925	5.58664	6.33023	7.09617	8.02094	9.15251	10.55889	12.55878
4202502.04	4.86417	5.36320	5.94986	6.68811	7.64618	8.70588	10.02029	11.67953	14.06529
4202452.04	5.10684	5.70838	6.36513	7.16480	8.13722	9.31649	10.78764	12.65279	15.32555
4202402.04	5.34874	5.97645	6.68516	7.53335	8.55923	9.58749	11.24584	13.27911	15.96272
4202352.04	5.49796	6.19607	6.93916	7.80568	8.83292	9.82958	11.50807	12.91641	15.57691
4202302.04	5.68283	6.35708	7.06419	7.87348	8.79599	9.63025	11.02064	12.05518	14.13270
4202252.04	5.78024	6.33570	6.94827	7.61860	8.34562	8.94093	9.76952	10.74040	12.10134
4202202.04	5.63436	6.08431	6.55983	7.05825	7.57952	8.12752	8.76121	9.52704	10.29019
4202152.04	5.30696	5.64274	5.98835	6.34661	6.72445	7.13477	7.69872	8.25371	8.74752
4202102.04	4.86988	5.11688	5.37480	5.65151	5.95703	6.30391	6.79336	7.26689	7.67858
4202052.04	4.41272	4.60821	4.82142	5.06034	5.33204	5.64211	6.06894	6.48344	6.97501
4202002.04	3.99815	4.16948	4.36246	4.58102	4.82750	5.10372	5.47677	5.84651	6.29838
4201952.04	3.64882	3.80819	3.98729	4.18675	4.40691	4.66692	4.98420	5.32708	5.75414
4201902.04	3.36017	3.50898	3.67244	3.85083	4.04648	4.29349	4.57519	4.90235	5.30765
4201852.04	3.11721	3.25285	3.39910	3.55810	3.73612	3.96649	4.23607	4.55048	4.93088
4201802.04	2.90555	3.02689	3.15767	3.30293	3.47088	3.69222	3.95288	4.25194	4.60269
4201752.04	2.71606	2.82498	2.94495	3.08262	3.24594	3.46111	3.71148	3.99196	4.30972
4201702.04	2.54515	2.64549	2.75966	2.89406	3.05493	3.26337	3.50077	3.75960	4.04332

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 556051.48	556101.48	556151.48	556201.48	556251.48
4201652.0	160.17722 (17103024)	171.68411 (17041101)	188.21153 (17041101)	199.83873 (17041101)	222.77590 (17041101)
4201602.0	145.90389 (17103024)	148.01111 (17103024)	152.80010 (17041101)	177.56649 (17103024)	173.38310 (17103024)
4201552.0	134.38726 (17032303)	135.41985 (17103024)	137.76413 (17103024)	166.91190 (17103024)	168.55390 (17103024)
4201502.0	134.34634 (17032303)	125.98581 (17032303)	126.14021 (17103024)	151.26861 (17103024)	157.31025 (17103024)
4201452.0	131.84129 (17032303)	126.04659 (17032303)	118.44781 (17032303)	131.56370 (17103024)	141.34395 (17103024)
4201402.0	127.29274 (17032303)	123.93695 (17032303)	118.58803 (17032303)	133.24957 (17032303)	123.64513 (17111720)
4201352.0	121.33015 (17032303)	119.99135 (17032303)	116.81099 (17032303)	138.36794 (17032303)	126.96029 (17032303)
4201302.0	114.02916 (17032303)	114.62735 (17032303)	113.37772 (17032303)	138.72524 (17032303)	131.17051 (17032303)
4201252.0	111.12342 (17100406)	108.11109 (17032303)	108.65003 (17032303)	135.38838 (17032303)	131.72031 (17032303)
4201202.0	123.94425 (17100406)	100.70699 (17032303)	102.85853 (17032303)	128.90662 (17032303)	128.91226 (17032303)
4201152.0	134.90262 (17100406)	110.69250 (17100406)	112.94318 (17032303)	119.96725 (17032303)	123.27300 (17032303)
4201102.0	143.38663 (17100406)	109.88480 (17100406)	100.34081 (17032303)	109.33879 (17032303)	116.07615 (17032303)
4201052.0	149.80289 (17100406)	129.49979 (17100406)	93.09479 (17100406)	97.24344 (17032303)	106.04735 (17032303)
4201002.0	179.95053 (17100406)	147.64135 (17100406)	110.92617 (17100406)	84.86508 (17032303)	94.85901 (17032303)
4200952.0	189.53901 (17100406)	162.65235 (17100406)	128.29059 (17100406)	94.77627 (17100406)	82.22553 (17032303)
4200902.0	193.54300 (17100406)	173.75601 (17100406)	144.62631 (17100406)	112.47262 (17100406)	78.55294 (17091905)
4200852.0	190.48920 (17100406)	180.37254 (17100406)	158.13069 (17100406)	128.85700 (17100406)	95.11493 (17100406)
4200802.0	186.58223 (17100406)	183.96187 (17100406)	167.73616 (17100406)	142.66714 (17100406)	111.33055 (17100406)
4200752.0	177.24022 (17100406)	182.07334 (17100406)	173.03996 (17100406)	153.56693 (17100406)	126.49960 (17100406)
4200702.0	164.98691 (17100406)	175.68360 (17100406)	173.92711 (17100406)	161.37716 (17100406)	139.27743 (17100406)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 556301.48	556351.48	556401.48	556451.48	556501.48
4203652.0	120.40271 (17030924)	114.86122 (17082202)	122.13457 (17082202)	131.09719 (17082202)	136.83521 (17082202)
4203602.0	124.74147 (17082202)	133.04376 (17082202)	139.04466 (17082202)	146.26259 (17082202)	150.51845 (17082202)
4203552.0	144.45196 (17082202)	150.61415 (17082202)	155.57425 (17082202)	160.79925 (17082202)	163.57717 (17111023)
4203502.0	164.34456 (17082202)	168.29679 (17082202)	170.82235 (17082202)	175.42835 (17111023)	178.22806 (17111023)
4203452.0	183.08962 (17082202)	184.43485 (17082202)	187.41783 (17111023)	190.89214 (17111023)	190.43102 (17111023)
4203402.0	201.62300 (17111023)	203.19562 (17111023)	204.11755 (17111023)	202.42950 (17111023)	198.41015 (17111023)
4203352.0	220.94128 (17111023)	218.02628 (17111023)	214.77291 (17111023)	209.10271 (17111023)	201.48465 (17111023)
4203302.0	234.67802 (17111023)	225.67112 (17111023)	219.65245 (17111023)	210.04264 (17111023)	198.87668 (17111023)
4203252.0	241.60055 (17111023)	228.11569 (17111023)	217.91974 (17111023)	204.76251 (17111023)	190.12880 (17111023)
4203202.0	241.83596 (17111023)	221.55063 (17111023)	209.24219 (17111023)	193.24556 (17111023)	175.58026 (17111023)
4203152.0	232.00024 (17111023)	208.79367 (17111023)	194.03322 (17111023)	176.23503 (17111023)	157.70864 (17111023)
4203102.0	214.15516 (17111023)	191.38725 (17111023)	171.87994 (17111023)	154.40504 (17111023)	136.76071 (17111023)
4203052.0	189.45309 (17111023)	167.18273 (17111023)	147.69725 (17111023)	131.01921 (17080622)	126.32752 (17080622)
4203002.0	160.63679 (17111023)	144.69476 (17080622)	138.65417 (17080622)	132.27857 (17080622)	125.73206 (17080622)
4202952.0	152.73992 (17080622)	144.58249 (17080622)	136.45164 (17080622)	128.38403 (17080622)	120.45092 (17080622)
4202902.0	148.22988 (17080622)	137.62314 (17080622)	128.61258 (17080622)	120.18475 (17082205)	113.02480 (17082205)
4202852.0	137.78208 (17082205)	128.05793 (17082205)	120.13840 (17082205)	112.13220 (17082205)	104.47660 (17082205)
4202802.0	127.03188 (17082205)	116.79954 (17082205)	108.60954 (17082205)	103.98829 (17080621)	100.13317 (17080621)
4202752.0	122.49483 (17080621)	142.53172 (17080621)	112.42553 (17080621)	107.73942 (17080621)	103.33669 (17080621)
4202702.0	125.45328 (17080621)	147.20359 (17080621)	113.83527 (17080621)	108.82083 (17080621)	103.89758 (17080621)
4202652.0	151.48076 (17080621)	144.40390 (17080621)	112.62557 (17080621)	107.12664 (17080621)	102.03999 (17080621)
4202602.0	142.04979 (17080621)	134.46987 (17080621)	108.55869 (17080621)	103.05611 (17080621)	97.96872 (17080621)
4202552.0	126.04900 (17080621)	118.64824 (17080621)	101.73610 (17080621)	96.50362 (17080621)	91.70213 (17080621)
4202502.0	137.46737 (17062423)	130.39299 (17062423)	106.52628 (17062423)	101.25397 (17062423)	96.45126 (17062423)
4202452.0	124.26739 (17062423)	143.36323 (17062423)	136.10036 (17062423)	129.54637 (17062423)	123.27362 (17062423)
4202402.0	127.43796 (17062423)	150.81095 (17062423)	114.75488 (17062423)	109.24300 (17062423)	104.16942 (17062423)
4202352.0	128.24932 (17051424)	121.45710 (17062423)	115.67541 (17062423)	110.66063 (17062423)	105.63504 (17062423)
4202302.0	136.66271 (17051424)	129.10133 (17051424)	121.26460 (17051424)	138.43211 (17062423)	133.25108 (17062423)
4202252.0	170.37698 (17051424)	133.92914 (17051424)	151.21688 (17051424)	142.38324 (17051424)	134.14697 (17051424)
4202202.0	175.03130 (17051424)	166.51479 (17051424)	159.14411 (17051424)	150.76912 (17051424)	143.76308 (17051424)
4202152.0	174.39265 (17120117)	165.14055 (17051424)	159.77888 (17051424)	153.55474 (17051424)	147.74305 (17051424)
4202102.0	190.26281 (17120117)	177.62989 (17120117)	165.28720 (17120117)	152.84432 (17120117)	145.30861 (17051424)
4202052.0	195.01494 (17120117)	185.85020 (17120117)	176.89330 (17120117)	166.59842 (17120117)	156.20416 (17120117)
4202002.0	187.50368 (17120117)	183.86902 (17120117)	178.09034 (17120117)	171.27709 (17120117)	164.14730 (17120117)
4201952.0	186.07521 (17041101)	170.52640 (17120117)	169.22634 (17120117)	166.43128 (17120117)	163.31566 (17120117)
4201902.0	240.25874 (17041101)	203.75547 (17041101)	170.11041 (17041101)	153.28644 (17120117)	153.34312 (17120117)
4201852.0	283.82438 (17041101)	251.89722 (17041101)	217.35722 (17041101)	185.55644 (17041101)	153.71133 (17041101)
4201802.0	306.19036 (17041101)	239.98569 (17041101)	255.75400 (17041101)	226.76929 (17041101)	197.34965 (17041101)
4201752.0	304.88156 (17041101)	242.82162 (17041101)	278.30578 (17041101)	256.76771 (17041101)	232.44247 (17041101)
4201702.0	238.94969 (17041101)	236.11782 (17041101)	229.92239 (17041101)	270.03458 (17041101)	254.26770 (17041101)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 556301.48	556351.48	556401.48	556451.48	556501.48
4201652.0	244.21375 (17041101)	258.76231 (17041101)	265.99577 (17041101)	266.83757 (17041101)	261.18207 (17041101)
4201602.0	197.13423 (17041101)	218.12209 (17041101)	233.62071 (17041101)	245.87277 (17041101)	250.46611 (17041101)
4201552.0	164.57611 (17103024)	169.44753 (17041101)	192.11410 (17041101)	211.56690 (17041101)	225.36076 (17041101)
4201502.0	158.76724 (17103024)	157.77084 (17103024)	151.63576 (17103024)	171.09243 (17041101)	190.47320 (17041101)
4201452.0	147.42579 (17103024)	151.02004 (17103024)	149.90646 (17103024)	145.28602 (17103024)	150.68972 (17041101)
4201402.0	132.10650 (17103024)	139.11944 (17103024)	142.56295 (17103024)	142.44787 (17103024)	139.88307 (17103024)
4201352.0	116.15309 (17111720)	123.62886 (17103024)	130.78190 (17103024)	134.92390 (17103024)	136.22239 (17103024)
4201302.0	120.92218 (17032303)	109.36203 (17111720)	115.99580 (17103024)	123.11689 (17103024)	127.86078 (17103024)
4201252.0	125.29061 (17032303)	115.21901 (17032303)	103.57226 (17111720)	108.55198 (17103024)	115.93402 (17103024)
4201202.0	126.45646 (17032303)	119.60297 (17032303)	109.92290 (17032303)	97.81507 (17032303)	101.77791 (17103024)
4201152.0	124.44186 (17032303)	120.79162 (17032303)	114.08824 (17032303)	104.91282 (17032303)	93.83507 (17032303)
4201102.0	119.34609 (17032303)	118.96377 (17032303)	115.34682 (17032303)	109.39898 (17032303)	100.38715 (17032303)
4201052.0	111.90235 (17032303)	114.50128 (17032303)	114.66274 (17032303)	111.07996 (17032303)	104.39116 (17032303)
4201002.0	102.78820 (17032303)	108.11377 (17032303)	110.72402 (17032303)	110.15031 (17032303)	106.42410 (17032303)
4200952.0	92.01284 (17032303)	99.58435 (17032303)	104.35515 (17032303)	106.53175 (17032303)	105.78290 (17032303)
4200902.0	80.84908 (17032303)	89.82545 (17032303)	96.18892 (17032303)	100.87667 (17032303)	102.39122 (17032303)
4200852.0	75.08957 (17091905)	79.57305 (17032303)	86.92766 (17032303)	92.86477 (17032303)	96.84190 (17032303)
4200802.0	82.37758 (17100406)	71.66840 (17091905)	77.12610 (17032303)	84.18478 (17032303)	89.68859 (17032303)
4200752.0	98.08696 (17100406)	71.56599 (17100406)	68.95053 (17091905)	74.24387 (17032303)	81.45472 (17032303)
4200702.0	112.93636 (17100406)	84.72370 (17100406)	68.56484 (17091905)	65.94143 (17091905)	72.71261 (17032303)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 556551.48	556601.48	556651.48	556701.48	556751.48
4203652.0	140.91398 (17082202)	143.44816 (17082202)	144.51690 (17111023)	145.76568 (17111023)	164.31431 (17082202)
4203602.0	152.76955 (17082202)	154.52636 (17111023)	157.14096 (17111023)	156.15173 (17111023)	177.40503 (17111023)
4203552.0	166.45507 (17111023)	166.83510 (17111023)	165.67831 (17111023)	165.06272 (17111023)	185.51408 (17111023)
4203502.0	178.92195 (17111023)	176.86444 (17111023)	173.00028 (17111023)	168.24055 (17111023)	162.45814 (17111023)
4203452.0	187.94962 (17111023)	182.97655 (17111023)	176.35693 (17111023)	168.52885 (17111023)	181.92764 (17111023)
4203402.0	192.67479 (17111023)	184.64609 (17111023)	175.37401 (17111023)	182.20869 (17111023)	169.79823 (17111023)
4203352.0	192.49317 (17111023)	181.69613 (17111023)	169.96970 (17111023)	166.03336 (17111023)	146.81719 (17111023)
4203302.0	186.37039 (17111023)	173.99283 (17111023)	160.21746 (17111023)	143.92951 (17111023)	135.07235 (17111023)
4203252.0	175.07190 (17111023)	161.06847 (17111023)	140.53689 (17111023)	121.95372 (17051504)	120.86611 (17111023)
4203202.0	160.11866 (17111023)	145.29708 (17111023)	125.83986 (17051504)	116.90538 (17111023)	104.99835 (17111023)
4203152.0	141.78822 (17111023)	126.97644 (17111023)	126.64238 (17080622)	105.40305 (17080622)	102.34644 (17080622)
4203102.0	121.23080 (17111023)	115.50045 (17080622)	130.76416 (17080622)	106.67287 (17080622)	102.40570 (17080622)
4203052.0	120.72104 (17080622)	134.44300 (17080622)	127.70666 (17080622)	104.72085 (17080622)	99.40154 (17080622)
4203002.0	118.48662 (17080622)	111.94725 (17080622)	120.44830 (17082205)	99.39672 (17080622)	93.80055 (17082205)
4202952.0	112.19962 (17080622)	119.81391 (17082205)	112.27716 (17082205)	94.09241 (17082205)	97.94319 (17082205)
4202902.0	106.15997 (17082205)	107.46216 (17082205)	92.93949 (17082205)	87.19939 (17082205)	91.04401 (17080621)
4202852.0	97.08103 (17082205)	105.98730 (17080621)	86.13699 (17080621)	83.42246 (17080621)	80.85031 (17080621)
4202802.0	96.27370 (17080621)	113.94496 (17080621)	89.42696 (17080621)	86.29006 (17080621)	83.34743 (17080621)
4202752.0	99.10000 (17080621)	94.93416 (17080621)	91.11274 (17080621)	87.62363 (17080621)	84.27013 (17080621)
4202702.0	99.12366 (17080621)	117.55856 (17080621)	90.87621 (17080621)	87.13519 (17080621)	83.62640 (17080621)
4202652.0	118.57991 (17080621)	92.92195 (17080621)	88.82079 (17080621)	84.98814 (17080621)	81.41889 (17080621)
4202602.0	108.82745 (17080621)	88.88637 (17080621)	84.89402 (17080621)	81.17211 (17080621)	77.69571 (17080621)
4202552.0	95.40505 (17080621)	83.24424 (17080621)	79.43147 (17080621)	75.87802 (17080621)	79.92787 (17062423)
4202502.0	92.06637 (17062423)	87.97124 (17062423)	84.17999 (17062423)	80.66500 (17062423)	90.03188 (17062423)
4202452.0	96.57930 (17062423)	92.25897 (17062423)	88.25835 (17062423)	84.54909 (17062423)	98.61349 (17062423)
4202402.0	124.47865 (17062423)	95.14591 (17062423)	91.10923 (17062423)	87.33213 (17062423)	105.44569 (17062423)
4202352.0	100.70876 (17062423)	122.61500 (17062423)	118.07146 (17062423)	88.61004 (17062423)	109.55441 (17062423)
4202302.0	102.40275 (17051424)	96.66703 (17051424)	92.31106 (17062423)	114.57353 (17062423)	110.59641 (17062423)
4202252.0	126.38161 (17051424)	102.57335 (17051424)	97.48547 (17051424)	112.24449 (17062423)	109.75986 (17062423)
4202202.0	136.47909 (17051424)	106.33160 (17051424)	101.73712 (17051424)	116.30135 (17051424)	110.28137 (17051424)
4202152.0	141.73162 (17051424)	135.58549 (17051424)	103.61399 (17051424)	123.87404 (17051424)	118.36157 (17051424)
4202102.0	140.82786 (17051424)	107.84251 (17051424)	103.80297 (17051424)	125.13729 (17051424)	120.39922 (17051424)
4202052.0	145.83845 (17120117)	114.68084 (17120117)	108.32995 (17120117)	101.69124 (17120117)	95.87804 (17120117)
4202002.0	156.28380 (17120117)	147.23734 (17120117)	112.91122 (17120117)	107.13302 (17120117)	121.51194 (17120117)
4201952.0	158.38366 (17120117)	152.35372 (17120117)	145.67042 (17120117)	138.77508 (17120117)	131.61801 (17120117)
4201902.0	152.04979 (17120117)	149.55596 (17120117)	145.99985 (17120117)	142.01988 (17120117)	136.71699 (17120117)
4201852.0	138.64932 (17120117)	139.40893 (17120117)	138.90813 (17120117)	137.55210 (17120117)	135.01288 (17120117)
4201802.0	169.76297 (17041101)	144.82202 (17041101)	126.00595 (17120117)	127.12048 (17120117)	127.13753 (17120117)
4201752.0	203.94089 (17041101)	180.40003 (17041101)	155.16628 (17041101)	122.15627 (17041101)	115.52337 (17022205)
4201702.0	233.47189 (17041101)	210.38759 (17041101)	182.90652 (17041101)	152.98659 (17041101)	129.13705 (17041101)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 556551.48	556601.48	556651.48	556701.48	556751.48
4201652.0	249.46694 (17041101)	232.16976 (17041101)	210.85873 (17041101)	185.78404 (17041101)	163.17324 (17041101)
4201602.0	249.09061 (17041101)	241.45348 (17041101)	228.83107 (17041101)	210.47029 (17041101)	191.74363 (17041101)
4201552.0	232.35248 (17041101)	235.06103 (17041101)	232.40888 (17041101)	222.70996 (17041101)	210.29009 (17041101)
4201502.0	203.38843 (17041101)	214.63494 (17041101)	220.81287 (17041101)	219.97963 (17041101)	215.91027 (17041101)
4201452.0	167.11652 (17041101)	184.38677 (17041101)	197.60473 (17041101)	206.13955 (17041101)	208.10962 (17041101)
4201402.0	133.67520 (17103024)	149.56748 (17041101)	166.90722 (17041101)	181.08270 (17041101)	188.89128 (17041101)
4201352.0	134.06555 (17103024)	129.09479 (17103024)	133.62009 (17041101)	150.74685 (17041101)	163.43116 (17041101)
4201302.0	129.59035 (17103024)	128.38885 (17103024)	124.50738 (17103024)	119.21271 (17041101)	133.37516 (17041101)
4201252.0	121.02866 (17103024)	123.32255 (17103024)	122.89477 (17103024)	119.98662 (17103024)	115.17117 (17103024)
4201202.0	109.41786 (17103024)	114.65584 (17103024)	117.45213 (17103024)	117.96998 (17103024)	115.97391 (17103024)
4201152.0	95.93566 (17103024)	103.31513 (17103024)	108.71646 (17103024)	111.92180 (17103024)	112.98176 (17103024)
4201102.0	89.22416 (17032303)	89.87668 (17111720)	97.01014 (17103024)	102.91121 (17103024)	106.39534 (17103024)
4201052.0	95.66881 (17032303)	85.59840 (17032303)	85.42645 (17111720)	90.51594 (17103024)	96.83204 (17103024)
4201002.0	100.18725 (17032303)	91.84885 (17032303)	80.98480 (17032303)	79.81750 (17111720)	85.65347 (17103024)
4200952.0	101.65041 (17032303)	95.33728 (17032303)	87.33535 (17032303)	78.18632 (17032303)	75.24824 (17022705)
4200902.0	101.16857 (17032303)	97.63458 (17032303)	91.01290 (17032303)	82.65929 (17032303)	73.85466 (17032303)
4200852.0	98.45751 (17032303)	96.35500 (17032303)	92.87154 (17032303)	87.18783 (17032303)	79.68242 (17032303)
4200802.0	92.61814 (17032303)	94.17548 (17032303)	92.81230 (17032303)	88.39034 (17032303)	82.51312 (17032303)
4200752.0	86.27053 (17032303)	89.99476 (17032303)	89.64812 (17032303)	88.52224 (17032303)	85.13409 (17032303)
4200702.0	78.72574 (17032303)	84.20185 (17032303)	86.09667 (17032303)	86.99445 (17032303)	85.74488 (17032303)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
554960.75	4202465.20	1693.13437	(17100606)	554889.41	4202471.69	1877.76348	(17100606)
555317.92	4202392.15	1413.25762	(17041101)				

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS) RESULTS ***

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

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
PAREA1	1ST HIGHEST VALUE IS	141.89623 AT	(555051.48, 4202502.04, 2.00, 2.00, 0.00)	GC	UCART1
	2ND HIGHEST VALUE IS	138.57548 AT	(555051.48, 4202552.04, 2.00, 2.00, 0.00)	GC	UCART1
	3RD HIGHEST VALUE IS	109.74256 AT	(555051.48, 4202602.04, 2.00, 2.00, 0.00)	GC	UCART1
	4TH HIGHEST VALUE IS	105.18013 AT	(555051.48, 4202452.04, 2.00, 2.00, 0.00)	GC	UCART1
	5TH HIGHEST VALUE IS	101.01392 AT	(555051.48, 4202402.04, 3.00, 3.00, 0.00)	GC	UCART1
	6TH HIGHEST VALUE IS	87.78414 AT	(555001.48, 4202452.04, 2.00, 2.00, 0.00)	GC	UCART1
	7TH HIGHEST VALUE IS	87.04027 AT	(555001.48, 4202502.04, 2.00, 2.00, 0.00)	GC	UCART1
	8TH HIGHEST VALUE IS	85.72062 AT	(555101.48, 4202502.04, 2.00, 2.00, 0.00)	GC	UCART1
	9TH HIGHEST VALUE IS	83.52716 AT	(555001.48, 4202552.04, 2.00, 2.00, 0.00)	GC	UCART1
	10TH HIGHEST VALUE IS	81.81751 AT	(555101.48, 4202552.04, 2.00, 2.00, 0.00)	GC	UCART1
ALL	1ST HIGHEST VALUE IS	141.89623 AT	(555051.48, 4202502.04, 2.00, 2.00, 0.00)	GC	UCART1
	2ND HIGHEST VALUE IS	138.57548 AT	(555051.48, 4202552.04, 2.00, 2.00, 0.00)	GC	UCART1
	3RD HIGHEST VALUE IS	109.74256 AT	(555051.48, 4202602.04, 2.00, 2.00, 0.00)	GC	UCART1
	4TH HIGHEST VALUE IS	105.18013 AT	(555051.48, 4202452.04, 2.00, 2.00, 0.00)	GC	UCART1
	5TH HIGHEST VALUE IS	101.01392 AT	(555051.48, 4202402.04, 3.00, 3.00, 0.00)	GC	UCART1
	6TH HIGHEST VALUE IS	87.78414 AT	(555001.48, 4202452.04, 2.00, 2.00, 0.00)	GC	UCART1
	7TH HIGHEST VALUE IS	87.04027 AT	(555001.48, 4202502.04, 2.00, 2.00, 0.00)	GC	UCART1
	8TH HIGHEST VALUE IS	85.72062 AT	(555101.48, 4202502.04, 2.00, 2.00, 0.00)	GC	UCART1
	9TH HIGHEST VALUE IS	83.52716 AT	(555001.48, 4202552.04, 2.00, 2.00, 0.00)	GC	UCART1
	10TH HIGHEST VALUE IS	81.81751 AT	(555101.48, 4202552.04, 2.00, 2.00, 0.00)	GC	UCART1

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

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

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

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

GROUP ID			AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
PAREA1	HIGH	1ST HIGH VALUE IS	2681.00121	ON 17101622:	AT (555051.48, 4202402.04, 3.00, 3.00, 0.00)	GC	UCART1
ALL	HIGH	1ST HIGH VALUE IS	2681.00121	ON 17101622:	AT (555051.48, 4202402.04, 3.00, 3.00, 0.00)	GC	UCART1

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

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  SigA Data

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

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

A Total of            0 Fatal Error Message(s)
A Total of            4 Warning Message(s)
A Total of          325 Informational Message(s)

A Total of         8760 Hours Were Processed

A Total of            0 Calm Hours Identified

A Total of          141 Missing Hours Identified (  1.61 Percent)


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


   ********   WARNING MESSAGES   ********
MX W403      69       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data
MX W403       1       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data
MX W450    8761       CHKDAT: Record Out of Sequence in Meteorological File at:      15010101
MX W450    8761       CHKDAT: Record Out of Sequence in Meteorological File at:    1 year gap

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

APPENDIX E

Excerpts of HARP Model

Construction Phase
Emissions Inventory and Risk Model Selection

Emission Inventory

Add Import Export Delete All Options Filter: All All

SrcID	StkID	ProID	PolID	PolAbbrev	Multiplier	Annual Ems (lbs/yr)	Max Hr Ems (lbs/hr)	MWAF
PAREA1	0	0	9901	DieselExhPM	1	162.5	0.143	1
SLINE1	0	0	106990	1,3-Butadiene	1	0.106	5.09E-05	1
SLINE1	0	0	75070	Acetaldehyde	1	0.087	4.2E-05	1
SLINE1	0	0	71432	Benzene	1	1.427	0.000686	1
SLINE1	0	0	50000	Formaldehyde	1	0.406	0.000195	1
SLINE2	0	0	106990	1,3-Butadiene	1	0.0474	2.28E-05	1
SLINE2	0	0	75070	Acetaldehyde	1	0.0391	1.88E-05	1
SLINE2	0	0	71432	Benzene	1	0.6391	0.000307	1
SLINE2	0	0	50000	Formaldehyde	1	0.1817	8.73E-05	1
SLINE3	0	0	106990	1,3-Butadiene	1	0.00474	2.28E-06	1
SLINE3	0	0	75070	Acetaldehyde	1	0.00391	1.88E-06	1
SLINE3	0	0	71432	Benzene	1	0.06391	3.07E-05	1
SLINE3	0	0	50000	Formaldehyde	1	0.01817	8.73E-06	1

HARP2 - Air Dispersion & Risk Tool (dated 19121)

File Tools Help

- Calculate Risk
  - Select Risk Scenario
  - Select Pathways to Evaluate an
  - Press Calculate
- View Risk Results
- Refined Acute Analysis
- Spatial Averaging Risk (Optional)
- Project Summary Report

Air Dispersion | Import/Calc GLCs | Risk Analysis

Select Risk Scenario

Analysis Type
- (●) Cancer Risk
- ( ) Chronic Risk (Non-cancer)
- ( ) 8-Hour Chronic Risk (Non-cancer)
- ( ) Acute Risk (Non-cancer)
- ( ) Cancer, Chronic, and Acute

Help me choose

Receptor Type
- (●) Individual Resident
- ( ) Population-Wide
- ( ) Worker

Help me choose

Exposure Duration
- ( ) 70 Year
- ( ) 30 Year
- ( ) 25 Year (Worker)
- ( ) 9 Year
- (●) User Defined (Tier 2) 1

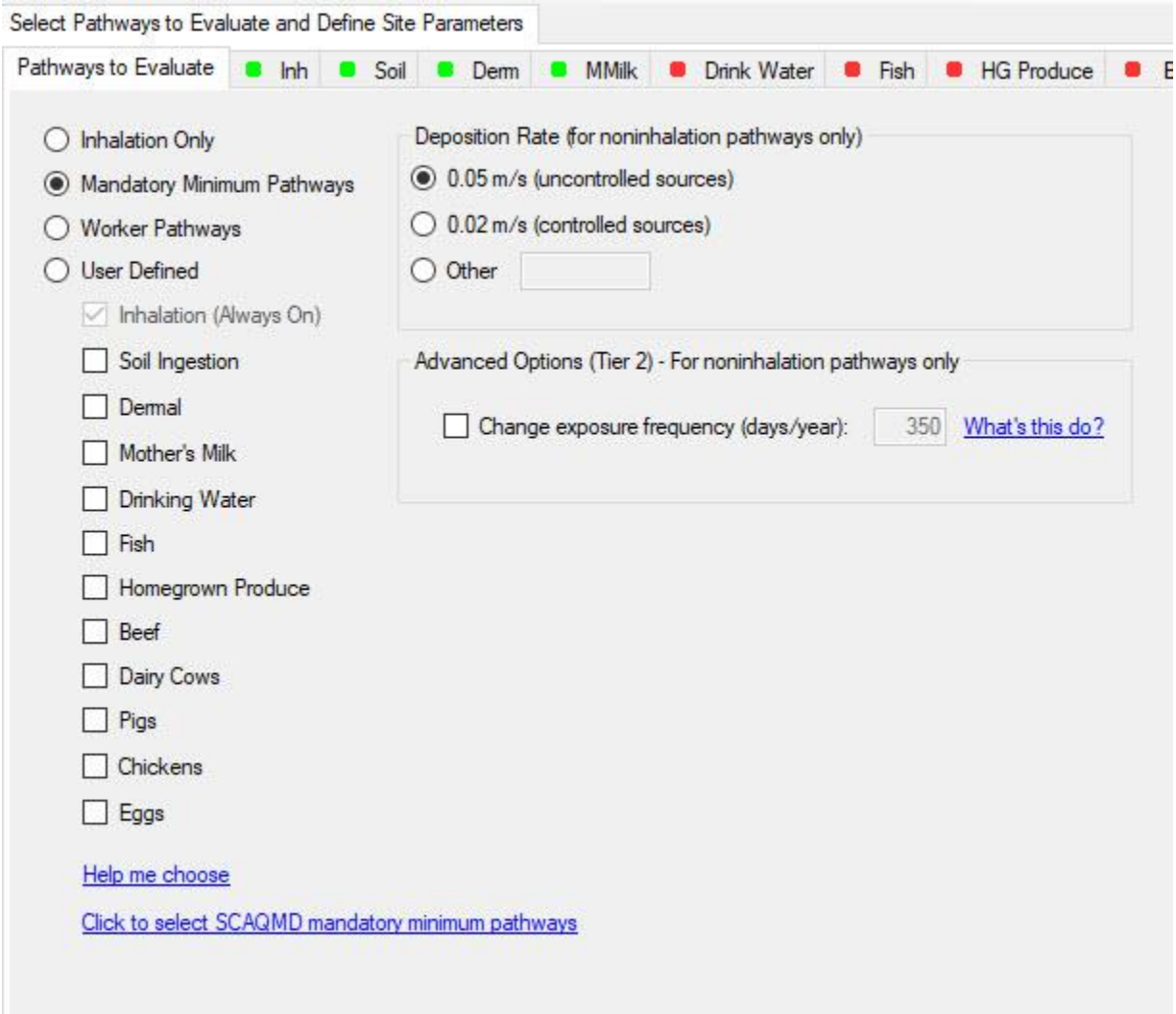
Start Age (years) 3rd Trimester

Help me choose

Intake Rate Percentile
- (●) OEHHA Derived Method
- ( ) 95th (High End)
- ( ) 65th (Mean)
- ( ) Risk Management Policy (RMP) - "Inhalation Only"
- ( ) RMP using the Derived Method

Help me choose

Construction Phase
Exposure Pathway Selection



Construction Phase
Risk Results

View Risk Results

Cancer | Chronic | 8-hour | Acute

Load File | Risk Views | Options | Export

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO
1	ALL	UCART1	553801.48	4200702.04	2.7575e-07	1YrCancerDerived_InhSoilDerm
2	ALL	UCART1	553851.48	4200702.04	2.8506e-07	1YrCancerDerived_InhSoilDerm
3	ALL	UCART1	553901.48	4200702.04	2.9490e-07	1YrCancerDerived_InhSoilDerm
4	ALL	UCART1	553951.48	4200702.04	3.0556e-07	1YrCancerDerived_InhSoilDerm
5	ALL	UCART1	554001.48	4200702.04	3.1657e-07	1YrCancerDerived_InhSoilDerm
6	ALL	UCART1	554051.48	4200702.04	3.2779e-07	1YrCancerDerived_InhSoilDerm
7	ALL	UCART1	554101.48	4200702.04	3.3932e-07	1YrCancerDerived_InhSoilDerm
8	ALL	UCART1	554151.48	4200702.04	3.5078e-07	1YrCancerDerived_InhSoilDerm
9	ALL	UCART1	554201.48	4200702.04	3.6131e-07	1YrCancerDerived_InhSoilDerm
10	ALL	UCART1	554251.48	4200702.04	3.7306e-07	1YrCancerDerived_InhSoilDerm
11	ALL	UCART1	554301.48	4200702.04	3.8371e-07	1YrCancerDerived_InhSoilDerm
12	ALL	UCART1	554351.48	4200702.04	3.9427e-07	1YrCancerDerived_InhSoilDerm
13	ALL	UCART1	554401.48	4200702.04	4.0435e-07	1YrCancerDerived_InhSoilDerm
14	ALL	UCART1	554451.48	4200702.04	4.1430e-07	1YrCancerDerived_InhSoilDerm
15	ALL	UCART1	554501.48	4200702.04	4.2394e-07	1YrCancerDerived_InhSoilDerm
16	ALL	UCART1	554551.48	4200702.04	4.3244e-07	1YrCancerDerived_InhSoilDerm
17	ALL	UCART1	554601.48	4200702.04	4.3912e-07	1YrCancerDerived_InhSoilDerm
18	ALL	UCART1	554651.48	4200702.04	4.4100e-07	1YrCancerDerived_InhSoilDerm
19	ALL	UCART1	554701.48	4200702.04	4.4068e-07	1YrCancerDerived_InhSoilDerm

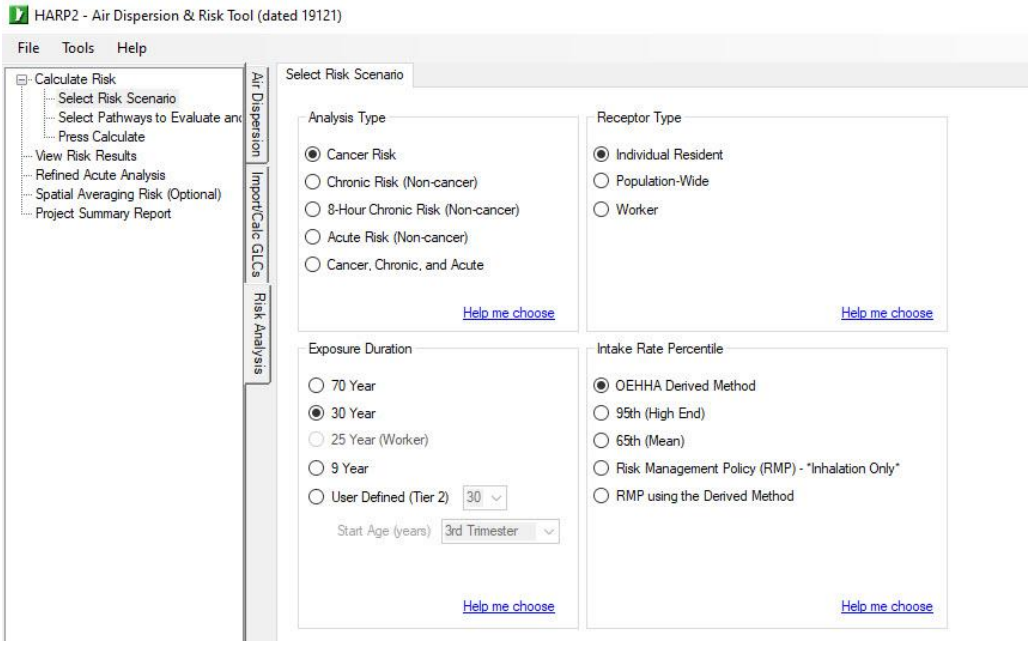
Operational Phase
Emissions Inventory

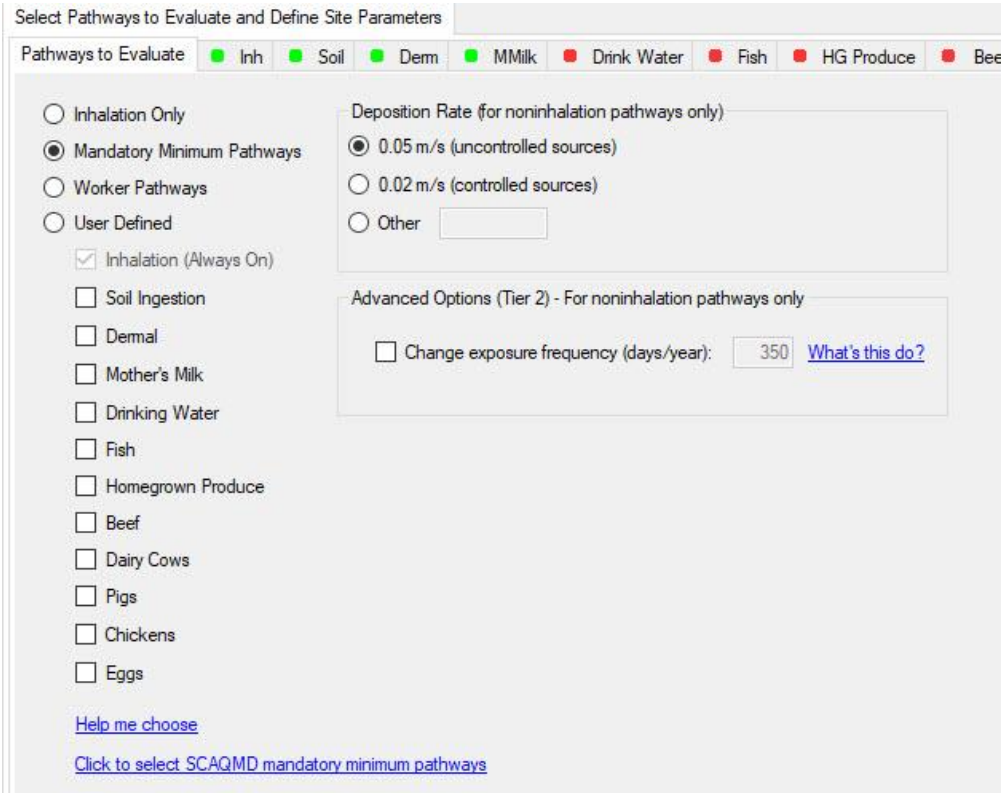
Emission Inventory

Add Import Export Delete All Options Filter: All All

SrcID	StkID	ProID	PolID	PolAbbrev	Multiplier	Annual Ems (lbs/yr)	Max Hr Ems (lbs/hr)	MWAF
PAREA1	0	0	9901	DieselExhPM	1	162.5	0.143	1
SLINE1	0	0	106990	1,3-Butadiene	1	0.106	5.09E-05	1
SLINE1	0	0	75070	Acetaldehyde	1	0.087	4.2E-05	1
SLINE1	0	0	71432	Benzene	1	1.427	0.000686	1
SLINE1	0	0	50000	Formaldehyde	1	0.406	0.000195	1
SLINE2	0	0	106990	1,3-Butadiene	1	0.0474	2.28E-05	1
SLINE2	0	0	75070	Acetaldehyde	1	0.0391	1.88E-05	1
SLINE2	0	0	71432	Benzene	1	0.6391	0.000307	1
SLINE2	0	0	50000	Formaldehyde	1	0.1817	8.73E-05	1
SLINE3	0	0	106990	1,3-Butadiene	1	0.00474	2.28E-06	1
SLINE3	0	0	75070	Acetaldehyde	1	0.00391	1.88E-06	1
SLINE3	0	0	71432	Benzene	1	0.06391	3.07E-05	1
SLINE3	0	0	50000	Formaldehyde	1	0.01817	8.73E-06	1

Operational Phase
Risk Model and Exposure Pathway Selection





Construction Phase
Risk Results

View Risk Results

Cancer | Chronic | 8-hour | Acute

Load File | Risk Views | Options | Export

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO
1	ALL	UCART1	553801.48	4200702.04	2.7575e-07	1YrCancerDerived_InhSoilDerm
2	ALL	UCART1	553851.48	4200702.04	2.8506e-07	1YrCancerDerived_InhSoilDerm
3	ALL	UCART1	553901.48	4200702.04	2.9490e-07	1YrCancerDerived_InhSoilDerm
4	ALL	UCART1	553951.48	4200702.04	3.0556e-07	1YrCancerDerived_InhSoilDerm
5	ALL	UCART1	554001.48	4200702.04	3.1657e-07	1YrCancerDerived_InhSoilDerm
6	ALL	UCART1	554051.48	4200702.04	3.2779e-07	1YrCancerDerived_InhSoilDerm
7	ALL	UCART1	554101.48	4200702.04	3.3932e-07	1YrCancerDerived_InhSoilDerm
8	ALL	UCART1	554151.48	4200702.04	3.5078e-07	1YrCancerDerived_InhSoilDerm
9	ALL	UCART1	554201.48	4200702.04	3.6131e-07	1YrCancerDerived_InhSoilDerm
10	ALL	UCART1	554251.48	4200702.04	3.7306e-07	1YrCancerDerived_InhSoilDerm
11	ALL	UCART1	554301.48	4200702.04	3.8371e-07	1YrCancerDerived_InhSoilDerm
12	ALL	UCART1	554351.48	4200702.04	3.9427e-07	1YrCancerDerived_InhSoilDerm
13	ALL	UCART1	554401.48	4200702.04	4.0435e-07	1YrCancerDerived_InhSoilDerm
14	ALL	UCART1	554451.48	4200702.04	4.1430e-07	1YrCancerDerived_InhSoilDerm
15	ALL	UCART1	554501.48	4200702.04	4.2394e-07	1YrCancerDerived_InhSoilDerm
16	ALL	UCART1	554551.48	4200702.04	4.3244e-07	1YrCancerDerived_InhSoilDerm
17	ALL	UCART1	554601.48	4200702.04	4.3912e-07	1YrCancerDerived_InhSoilDerm
18	ALL	UCART1	554651.48	4200702.04	4.4100e-07	1YrCancerDerived_InhSoilDerm
19	ALL	UCART1	554701.48	4200702.04	4.4068e-07	1YrCancerDerived_InhSoilDerm
20	ALL	UCART1	554751.48	4200702.04	4.3624e-07	1YrCancerDerived_InhSoilDerm
21	ALL	UCART1	554801.48	4200702.04	4.2791e-07	1YrCancerDerived_InhSoilDerm
22	ALL	UCART1	554851.48	4200702.04	4.1677e-07	1YrCancerDerived_InhSoilDerm
23	ALL	UCART1	554901.48	4200702.04	4.0377e-07	1YrCancerDerived_InhSoilDerm
24	ALL	UCART1	554951.48	4200702.04	3.9018e-07	1YrCancerDerived_InhSoilDerm
25	ALL	UCART1	555001.48	4200702.04	3.7670e-07	1YrCancerDerived_InhSoilDerm

APPENDIX F

Calculation of Vehicular Emissions Along Richmond Parkway and Parr Boulevard

Table F-1
Calculation Off-Site Emissions from
Truck Travel within 1,000 feet (0.19 Miles) of Project

Emissions from Trucks		Segment 1 South on Richmond Pkwy	Segment 2 North on Richmond Pkwy	Segment 3 East on Parr Bld
HD Truck Vehicle Count				
Daily	*(truck trips/day)*	1,860	1,860	330
Annual	*(truck trips/yr)*	678,900	678,900	120,450
Distance Travelled				
1 Truck Trip	*(mile/truck trip)*	0.19	0.19	0.19
All Truck Trips Annually	*(total miles/yr)*	128,991	128,991	22,886
Emission Factors (PM-2.5)				
Vehicle Exhaust (Note 1)	*(grams/mile)*	0.019	0.019	0.019
Emissions				
1 Truck	*grams*	0.0036	0.0036	0.0036
All Truck Trips Annually	*grams*	2,451.9	2,451.9	435.0
All Truck Trips Annually	*lbs*	5.401	5.401	0.958

Notes:
1. Emissions based on EMFAC 2017 for CY 2022 aggregate speed and model years
2. Daily vehicle count: 120 HD trucks/day
Ref: E-Mail from KD Anderson Oct 5, 2020

Table F-2
Calculation of Off-Site Emissions from Light Duty Vehicles Along Richmond Parkway

No. of Vehicles per Day	29,140	veh/day total
From Fehr & Peers	10,636,100	veh/yr total
	5,318,050	veh/yr per 0.19 mile segment
Length of Roadway (1,000 ft)	0.19	mile
Annual Miles per Roadway Segment	1,010,430	miles/yr per 0.19 mile segment

	EF	Emission Rate (Vehicle Travel)			
TAC	(mg/mile)	(mg/yr)	(g/yr)	(lb/yr)	
1,3 Butadiene	4.48	4,526,724	4526.724	9.971	
Benzene	45.28	45,752,248	45752.248	100.776	
Formaldehyde	12.87	13,004,228	13004.228	28.644	
Acetaldehyde	2.77	2,798,890	2798.890	6.165	

NOTES

1. Emission Factors From: Zhu, Durbin, Norbeck and Cocker (July 2004)
"Internal Combustion Engine (ICE) Air Toxic Emissions"
Final Report to Research Division CARB, Sacramento, CA

2. Emissions from Vehicle Idle + start-up and shut-down estimated to equal 50% of emissions from vehicle travel

Table F-3
Calculation of Off-Site Emissions from Light Duty Vehicles
Along Parr Blvd East of Richmond Parkway

No. of Vehicles per Day	2,970	veh/day total
From Fehr & Peers	1,084,050	veh/yr total
	542,025	veh/yr per 0.19 mile segment
Length of Roadway (1,000 ft)	0.19	mile
Annual Miles per Roadway Segment	102,985	miles/yr per 0.19 mile segment

	EF	Emission Rate (Vehicle Travel)			
TAC	(mg/mile)	(mg/yr)	(g/yr)	(lb/yr)	
1,3 Butadiene	4.48	461,372	461.372	1.016	
Benzene	45.28	4,663,149	4663.149	10.271	
Formaldehyde	12.87	1,325,414	1325.414	2.919	
Acetaldehyde	2.77	285,268	285.268	0.628	

NOTES

1. Emission Factors From: Zhu, Durbin, Norbeck and Cocker (July 2004)
"Internal Combustion Engine (ICE) Air Toxic Emissions"
Final Report to Research Division CARB, Sacramento, CA

2. Emissions from Vehicle Idle + start-up and shut-down estimated to equal 50% of emissions from vehicle travel

Final Analysis of Public Health Risks At a Proposed Land Use Development

Richmond, California

January 04, 2021

Prepared For:
Scannell Properties
3468 Mt. Diablo Boulevard
Suite B-115
Lafayette, CA 94549
Contact: Matt Anderson
Development Manager

Prepared By:
Environmental Permitting Specialists
7068 Riverside Boulevard
Sacramento, CA 95831
Contact: Ray Kapahi, Principal
Tel: 916-687-8352
Ray.Kapahi@gmail.com

TABLE OF CONTENTS

SECTION 1: INTRODUCTION…… 3
1.1 Background and Facility Location
1.2 Scope of a Health Risk Assessment
1.3 Significance Criteria

SECTION 2: PROCESS DESCRIPTION AND SUMMARY OF EMISSIONS …… 7
2.1 Process Description
2.2 Summary of Emissions

SECTION 3: EXPOSURE ASSESSMENT…… 9
3.1 Model Setup and Options
3.2 Modeling Grid
3.2 Meteorological Data

SECTION 4: HEALTH RISK ASSESSMENT …… 13

SECTION 5: RESULTS AND CONCLUSIONS …… 22

SECTION 5: REFERENCES…… 23

APPENDIX
A: CalEEMod Model Emission Reports
B: Traffic Data
C: Detailed Emission Calculations
D: Excerpts of AERMOD Model Report
E: Excerpts of HARP Model
F: Cumulative Risk Emission Estimate

SECTION 1: INTRODUCTION

1.1 Background and Project Area

Environmental Permitting Specialists (EPS) has been retained by Scannell Properties to evaluate public health risks associated with the proposed North Richmond Parr Boulevard Development to be located in Richmond (Contra Costa County), California. This risk analysis is in support of an Environmental Impact report (EIR) by Contra Costa County Planning department.

The proposed project development would consist of two warehouse buildings on a 29.4 acre site. The two buildings would occupy approximately 327,633 square feet. The project would be located at the Northeast corner of Parr Boulevard and North Richmond Parkway in Richmond. Figures 1-1 and 1-2 illustrate the project location and site map respectively. Construction is expected to begin in January 2021 and be completed by the end of 2021. The buildings would be occupied in 2021.

Both construction related and long-term health risks are evaluated. Public health risks refer to four (4) types of risks. These are:

1. Cancer Risk
2. Acute Non-Cancer Risk
3. Chronic Non-Cancer Risk
4. Annual exposure to Fine Particulate (PM-2.5)

The objective of the risk assessment is to determine if the proposed project is likely to expose nearby residents or workers to significant health risks. The criteria used to determine if health risks are significant is discussed in Section 1.3 of this report.

1.2 Scope of the Risk Assessment

Preparation of risk assessments is a three step process. The first step is to identify potential contaminants that may lead to public health risks. The second step is to assess the amount of contaminants that may reach the public (exposure assessment). The last step is to calculate the magnitude of the health risk as a result of exposure to harmful contaminants on the basis of the toxicology of the contaminants.

The Office of Environmental Health Hazard Assessment (OEHHA), and the Bay Area Air Quality Management District (BAAQMD) have provided guidance on the procedures that should be used, including, toxicological data for individual contaminants. While this risk assessment uses certain procedures and data from OEHHA and BAAQMD Guidelines, this assessment is not intended to satisfy the reporting requirements under AB-2588 “Air Toxics” Hot Spots program.

1.3 Significance Criteria

The following significance criteria are used in this report to assess the significance of public health risks. These criteria are based on the May 2017 BAAQMD CEQA Air Quality Guidelines. These Guidelines are designed to inform the public and the Lead Agencies of the extent of airborne emissions from stationary sources and the potential public health impacts associated with such emissions.

Table 1-1
Thresholds of Significance for Public Health Risks

Risk Metric	Project Level	Cumulative
Residential Lifetime Cancer Risk	10 cancers per million	100 cancers per million
Workplace Cancer Risk	10 cancers per million	100 cancers per million
Chronic Hazard Index	1	10
Acute Hazard Index	1	10
Exposure to Annual PM-2.5 Concentration	0.3 ug/m3	0.8 ug/m3
Note: ug/m3= micrograms per cubic meter		

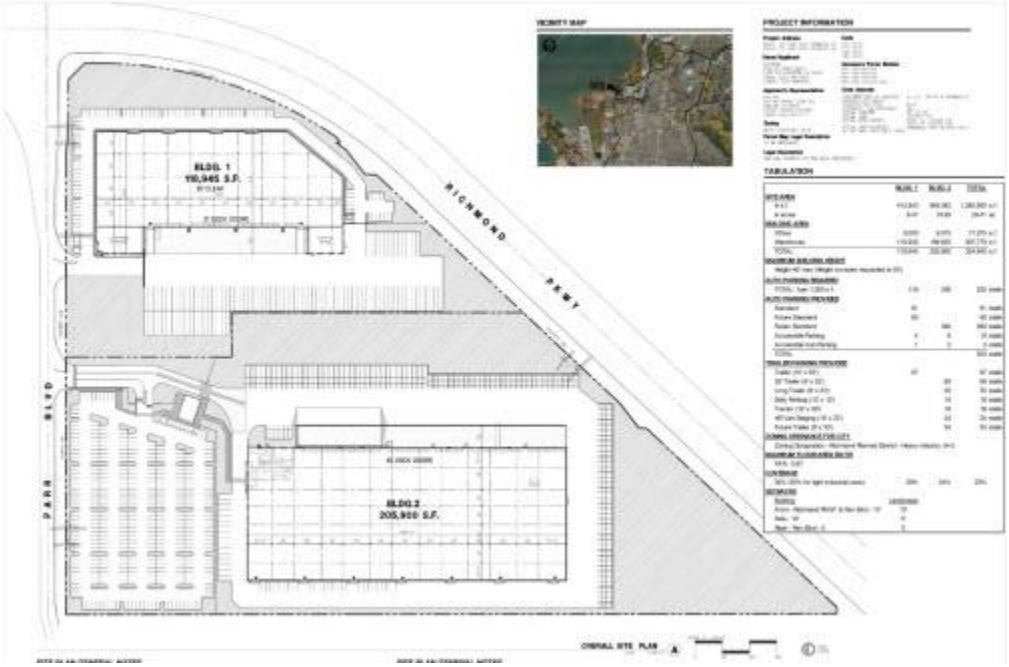
1.4 Report Organization

This report is divided into four Sections and two Appendices. Immediately following this Introduction, Section 2 discusses the short-term (construction related) and long-term (operational or occupancy phase) emissions associated with the project. This is followed by Section 3 that describes the exposure assessment. This assessment described the data and tools used to determine the dispersion pattern of emissions from the project. This analysis takes into account the location of nearby homes and businesses, local wind patterns and topography. Section 4 describes the risk calculation that combines the results from Sections 2 and 3 to calculate health risks. The report concludes with Section 4 that discusses the results and the significance of the findings. Technical data and calculations appear in the Appendices.

Figure 1-1
Vicinity Map
Source: K. D. Anderson

Figure 1-2
Site Map

Source: K. D. Anderson



SECTION 2: EMISSIONS SUMMARY

EPS evaluated both short-term and long term emissions of toxic air contaminants (TACs) for this project. Short-term emissions are associated with the construction phase and typically last 1 to 2 years depending on the project and construction schedule. Long-term emissions are associated with operational or occupancy phase.

EPS relied, in part, on air quality analysis completed by K. D. Anderson that provided annual emissions during the construction and operational phases. These data were supplemented with additional data such as emissions from idling of diesel trucks, on-site movement of trucks, emissions from transport refrigeration units, and re-suspension of road dust.

2.1 Construction (Short-Term) Emissions

The main toxic air contaminant associated with construction is diesel exhaust consisting of fine particulate matter (DPM) from construction equipment. Emissions of fine particulate matter (PM-2.5) from construction equipment is used as a surrogate of DPM.

EPS reviewed the September 8, 2020 Air Quality Study and Appendices prepared by K. D. Anderson. The Appendices included CalEEMod reports providing daily and annual emissions for the construction and operational phases. K. D. Anderson provided an updated estimate of annual emissions for the construction phase. The current analysis uses this mitigated estimate of annual emissions. These emissions are summarized below in Table 2-1. The annual emissions under "Exhaust PM2.5" serve as a surrogate of DPM emissions and was used in calculating construction related health risks. The average annual emission rate over two years of DPM is estimate to be 0.08125 tons per year or 162.5 pounds per year.

Table 2-1

Mitigated Construction

With Mitigation

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.5017	4.3298	5.9773	0.0141	0.7290	0.1562	0.8852	0.2745	0.1487	0.4232	0.0000	1,258.2065	1,258.2065	0.2041	0.0000	1,263.3099
2022	0.4934	0.3212	0.4206	8.1000e-004	0.0149	0.0147	0.0296	4.0100e-003	0.0138	0.0178	0.0000	71.7092	71.7092	0.0153	0.0000	72.0904
Maximum	**0.5017**	**4.3298**	**5.9773**	**0.0141**	**0.7290**	**0.1562**	**0.8852**	**0.2745**	**0.1487**	**0.4232**	**0.0000**	**1,258.2065**	**1,258.2065**	**0.2041**	**0.0000**	**1,263.3099**

Source: K. D. Anderson Sept 2020

An excerpt of the CalEEMod emissions report is provided in Appendix A.

2.2 Operational (Long-Term) Emissions

Long-term (occupancy phase) toxic emissions are associated with several on-site and off-site activities. Off-site emissions were calculated within 1,000 feet of the project boundary. The 1,000 feet is the "zone of influence" noted in the BAAQMD CEQA Guidelines. In addition to TACs, the BAAQMD CEQA Guidelines require that exposure to annual concentration of PM-2.5 be evaluated. The sources of emissions are summarized below in Table 2-2.

Table 2-2 Summary of Emission Sources (Operational Phase)	
On-Site Emission Sources	**Off-Site Emission Sources**
Truck Idle - DPM	Light and Heavy Duty Trucks - DPM, - PM-2.5 (from tire and brake wear)
On-Site Service Equipment - DPM	Automobile Travel - various TACs
On-Site Truck Movement - DPM	Re-Suspended Road Dust - PM-2.5

The average daily volume of vehicles was provided by Fehr & Peers and is provided in Appendix B. Daily number of vehicles was estimated to be 1,920 vehicles per day. Of this volume, automobiles and light duty vans account for 1,755 vehicles per day. Heavy duty trucks account for the remainder 585 vehicles per day or 30% of the total vehicles. A breakdown of vehicles is shown in Table 2-3. See Appendix B for addition traffic data.

Table 2-3 Summary of Daily Vehicular Traffic	
Vehicle Type	Daily Trips
Automobiles	1,335
Delivery Vans	420
Heavy Trucks	165
Total	1,920

Source: Fehr & Peers

A summary of emissions is provided in Table 2-4. Detailed calculations are provided in Appendix C.

Table 2-4
Summary of Emissions in Pounds per Year

Pollutant	On-Site Truck Idle, etc.	Off-Site Truck Travel	Off-Site Automobile Travel	Total (lbs/day)
DPM	56.10	0.63	None	56.73
Total PM-2.5		449.42		449.42
1,3 Butadiene			0.685	0.685
Acetaldehyde			0.565	0.565
Benzene			9.234	9.234
Formaldehyde			2.625	2.625

The emissions presented in Table 2-4 indicate a very low level of emissions. This is due to the low traffic volume and the low level of tailpipe emissions. For example, based on EMFAC 2017 emission estimated for the San Francisco Bay area, a heavy truck releases only 0.019 grams per mile or 0.000042 pound per mile of DPM. For 165 trucks per day, this equates to less than 0.0069 pounds per mile (0.11 ounce per mile).

SECTION 3: EXPOSURE ASSESSMENT

Exposure assessment involves translating the emission rate (e.g., lbs/hr) of individual toxic air contaminants (presented in Tables 2-1 and 2-4) into the concentration (e.g., grams/cubic meter or parts per million) of each toxic air contaminant. The key step in performing an exposure assessment is the application of an air dispersion model. The dispersion model incorporates the local meteorological data (wind speed, wind direction, local temperature, inversion heights, etc.), stack height, exhaust flow characteristics, into the concentration of individual air contaminant. EPA and the BAAQMD recommended AERMOD dispersion model was employed in the current exposure assessment.

This section discusses the model set-up, the extent of the modeling area, and the choice and duration of meteorological data.

3.1 Model Set-Up

The following regulatory default options were used. They are based on the latest EPA guidance on running AERMOD.

- Use of Calm Wind Processing
- Use of Missing Data Processing

For the construction phase, on-site emissions were modeled as a single area source. Construction traffic within 1,000 feet of the project were modeled as three line sources. For the operational phase, emissions were modeled as a single area source plus three line sources representing roadways leading to the project site. See Figure 3-1.

Emissions from the logistics park were modeled as a ground based area source. Emissions from vehicle movement were modeled as line sources. The line sources are treated as a series of small area sources in the AERMOD model. Adjustment due to changes in elevation in the modeling area were included using the digital elevation model (DEM)[1] terrain data.

For the construction phase, emissions were assumed to occur between 8 am and 5 pm. For the operational phase, emissions were assumed to occur 24/7.

3.2 Modeling Grid and Coordinate System

A rectangular (x-y) Cartesian coordinate system was used. A region 2,500 x 2,500 meters (1.5 miles x 1.5 miles) was used. The modeling region divided into 50 meter cells for a total of 3,600 individual receptors in the vicinity of the project area. See Figure 3-1 for a layout of the modeling grid. Most (estimated to equal 67%) of the traffic would be entering from the South along Richmond Parkway. About 30% of the traffic would enter from the North. The remaining (3%) would be coming from the East along Parr Blvd.

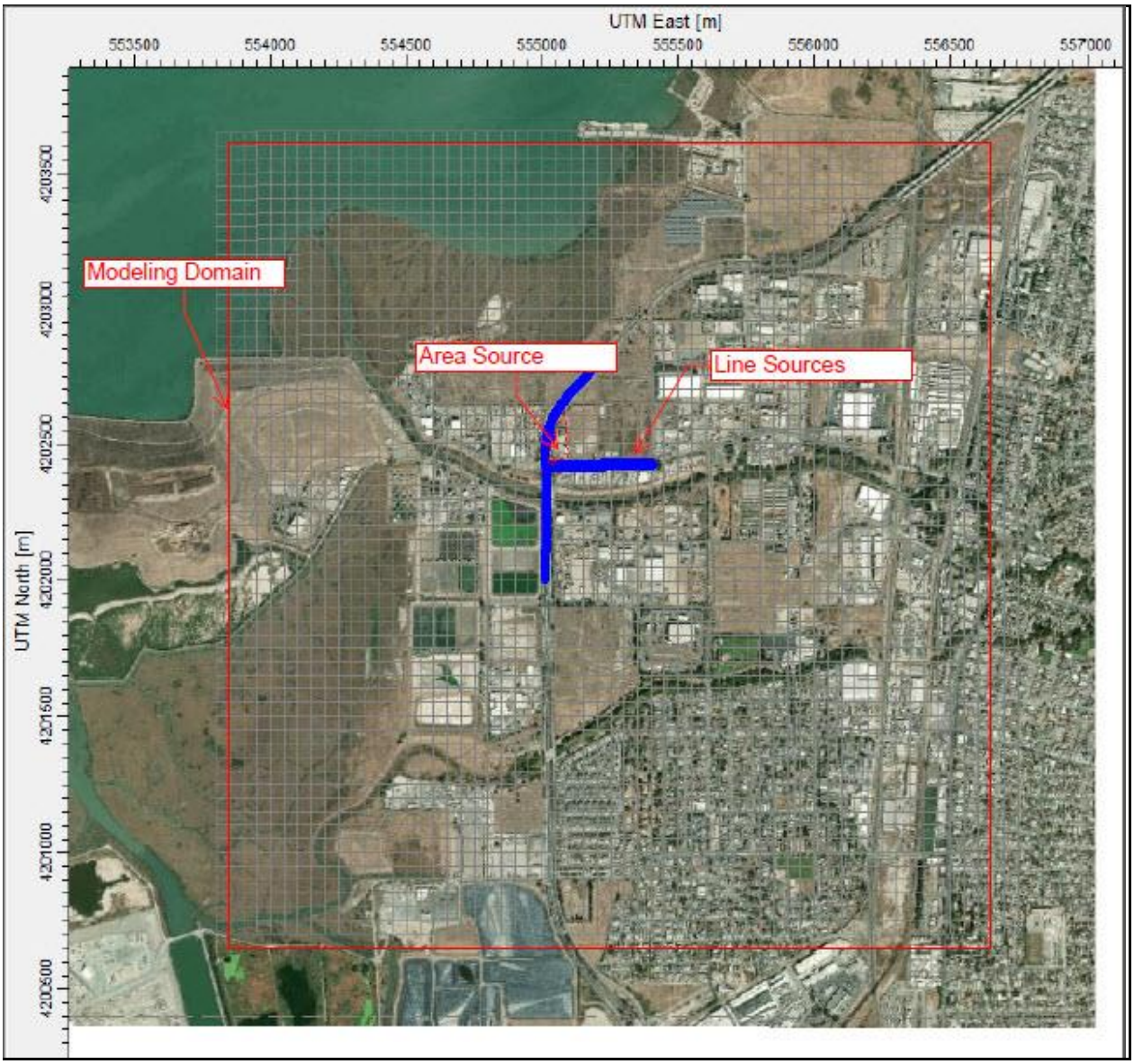
3.3 Meteorological Data

Four years of meteorological data (2013 to 2017) was used in the exposure assessment. The surface data (wind speed, wind direction, temperature, etc.) were recorded at Chevron Tower located in North Richmond. These data were provided by the BAAQMD. We note that the available data excluded data for 2014, as there are too many missing hours. Meteorological data must be at least 90% complete in order to be used in the HRA. As a result, five consecutive years of data were unavailable. This was reviewed with staff at the BAAQMD (James Cordova April 8, 2020) prior to use of the data.

[1] Information available at: https://www.usgs.gov/faqs/what-are-digital-elevation-models-dems?qt-news_science_products=0#qt-news_science_products

In addition to surface meteorological data, hourly inversion height data are also required. Four years of data from the nearest upper air station (Oakland Airport, CA) were used to develop hourly inversion heights.

Figure 3-1
Lay-Out of Modeling Grid and Emission Sources



SECTION 4: HEALT RISK ANALYSIS

Health risks from exposure to various toxic air contaminants is discussed in this section. The emission rates of various TACs discussed in Section 2 are used as a basis to quantify various health risks. EPS used the HARP2 risk model developed by CARB and the Office of Environmental Health Hazard Assessment (OEHHA)[2] to calculate the actual health risks. As noted in Section 1, four types of health risks were calculated (cancer, chronic non-cancer, acute non-cancer and annual PM-2.5 concentration). The exposure duration for each type of risk is as follows:

Table 4-1
Exposure Duration for Various Risks

Risk	Construction Phase	Operational Phase
Residential Cancer Risk	2 years	30 years
Worker Cancer Risk	2 years	25 years
Chronic Hazard Index	2 years	30 years
Acute Hazard Index	1 hour	1 hour
PM-2.5	N/A	1 Year

4.1 Cancer Risks – Construction Phase

The modeling results for the construction phase are shown in Figure 4-1. This figure shows the spatial distribution of residential cancer risk based on a 2 year exposure in the vicinity of the project site. The results show that the residential cancer risk varies between 8 to less than 0.1 cancers per million depending on location. The maximum cancer risk at the closest residential area located to the South (Receptor # 474) on Malcolm Drive is 0.2 cancers per million.

The spatial distribution of worker cancer risk is shown in Figure 4-2. Worker cancer risk accounts for reduced exposure (40 hours per week instead of 24/7). The 2 year exposure duration beings at age 18 instead of 3rd trimester. The maximum worker risk occurs just West of Richmond Parkway and is estimated to equal 0.344 (Receptor # 719). The cancer risk is lower at all other worker locations.

4.2 Cancer Risks – Operational Phase

The spatial distribution of residential (30 year) cancer risk is shown in Figure 4-3. The results are in terms of a probability (cancers risk per million). The maximum cancer risk at nearby homes is 1.76 cancers per million. These homes are along Malcolm Drive to the South. Figure 4-4 presents the cancer risk at nearby commercial and workplaces.

[2] OEHHA Hotspots Analysis and Reporting Program (HARP) available at: https://ww3.arb.ca.gov/toxics/harp/harp.htm

The maximum non-cancer risks at nearby homes were calculated in terms of a hazard index (HI). The results as follows:

Maximum Chronic Non-Cancer (HI); 1.16×10^{-4}

Maximum Acute Non-Cancer HI: 2.05×10^{-3}

Excerpts of the HARP2 model showing the calculated health risks are provided in Appendix E.

Figure 4-1
Spatial Variation of Residential Cancer Risk per Million
Construction Phase

Figure 4-2
Spatial Variation of Worker Cancer Risk per Million
Construction Phase

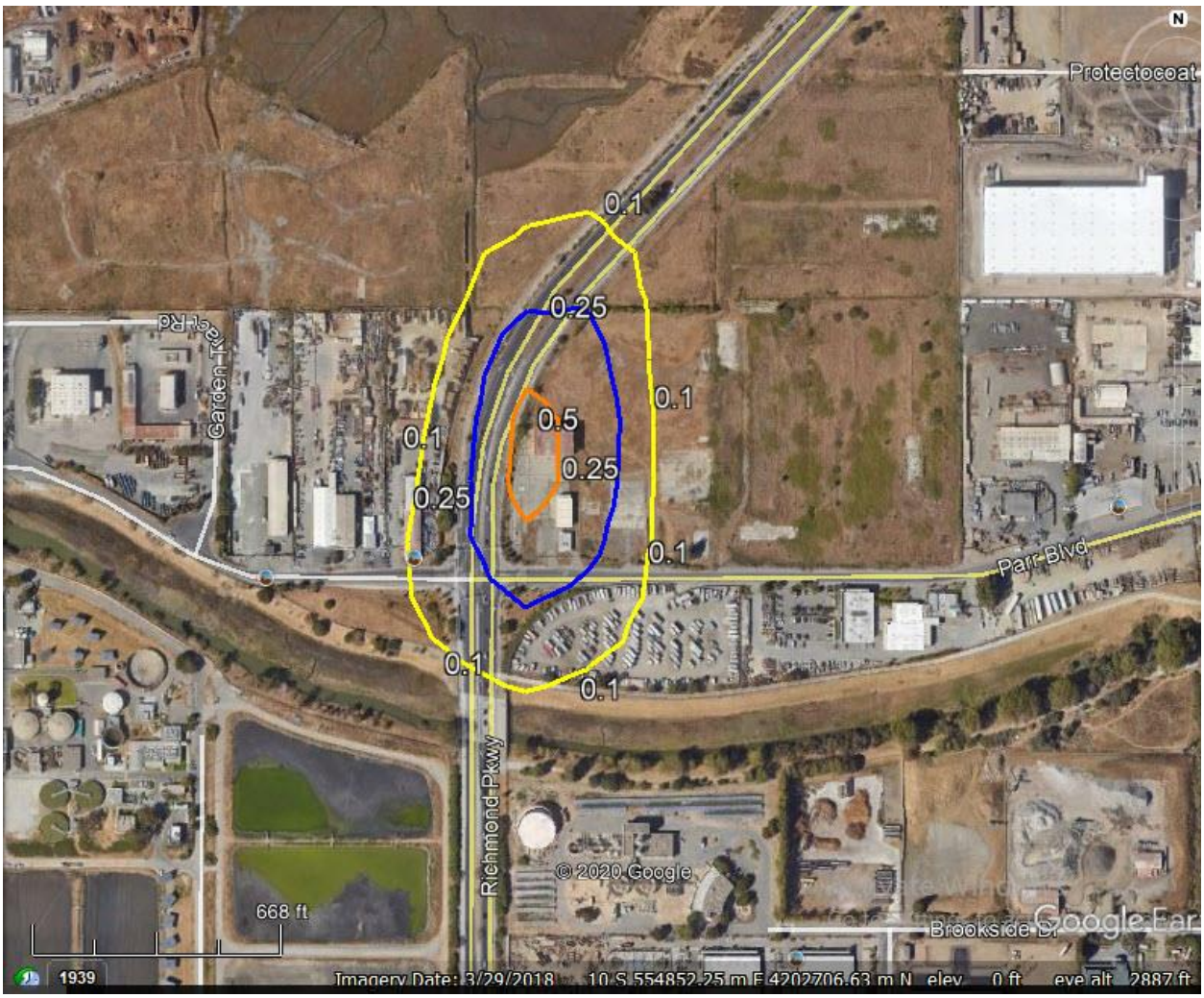
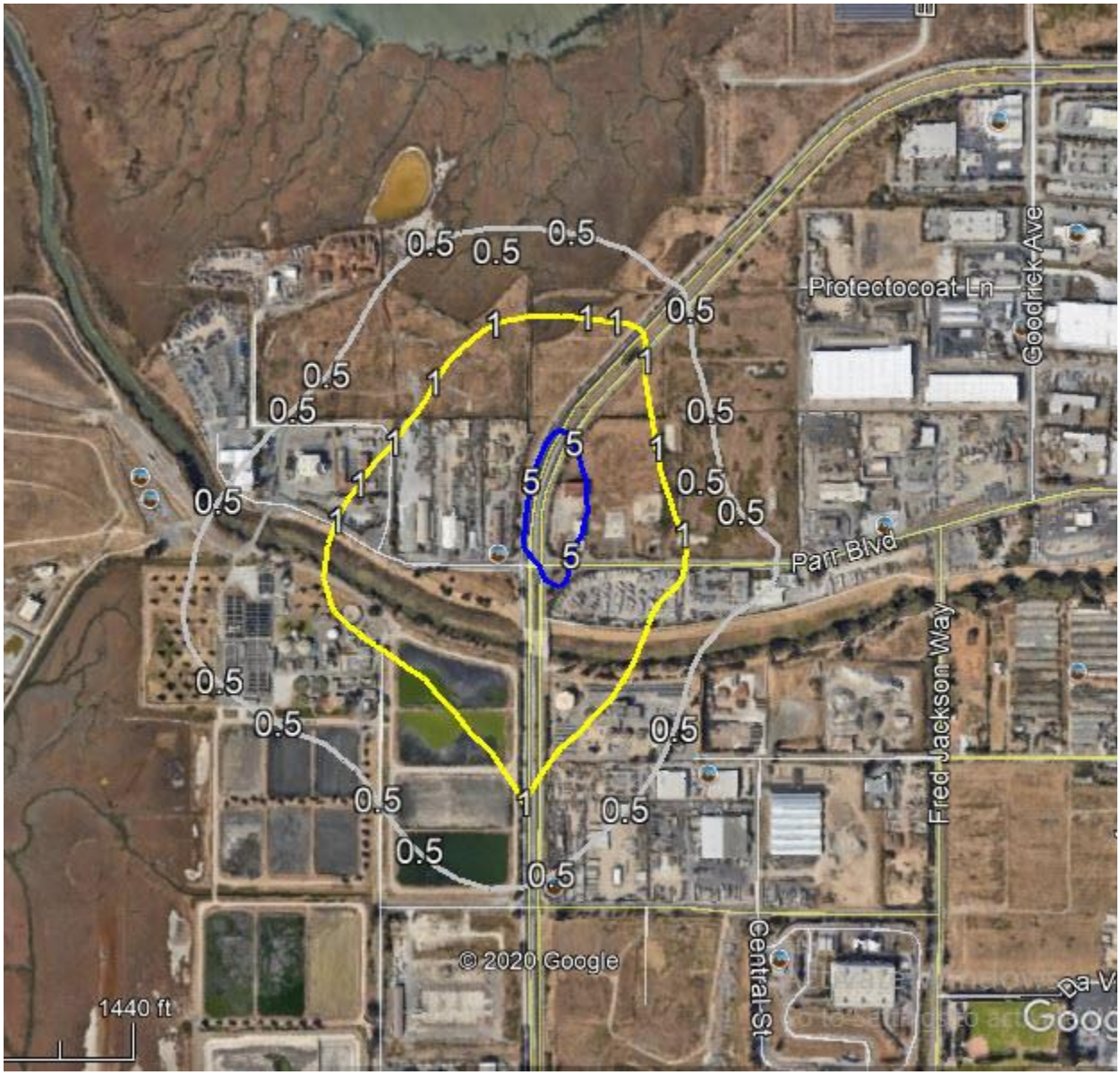


Figure 4-3

Spatial Variation of 30 Year Residential Cancer Risk per Million
Operational Phase

Figure 4-4
Spatial Variation of 25 Year Worker Cancer Risk per Million
Operational Phase



4.3 Annual PM-2.5 Risk – Operational Phase

The spatial distribution of annual PM-2.5 concentration is shown in Figure 4-5. The annual concentration at nearby homes varies between 0.015 to less than 0.01 micrograms per cubic meter (ug/m3). This is well below the threshold of significance set by the BAAQMD of 0.3 ug/m3. Excerpts of the AERMOD model report are provided in Appendix D.

4.4 Cumulative Impacts

The two main sources within 1,000 feet of the project are:

1. Vehicular traffic along Richmond Parkway and Parr Boulevard

2. East Bay Municipal District Water Reclamation Plant at 105 Brookside Drive

Based on daily traffic volumes estimated by Fehr & Peers, EPS estimate the annual estimate of toxic emissions from autos and heavy duty trucks. These annual emissions were used to calculate the back ground 30-year residential cancer risk. A copy of the emissions estimates is provided in Appendix F.

The EBMUD facility does not have any boilers or heaters. There is one emergency standby electric generator for which a BAAQMD permit is required. Other than the generator, there are no other permitted sources. As a result, this facility would not contribute to the background cancer risk.

The results of the analysis show that the background cancer risk is approximately 35 cancer per million adjacent to Richmond Parkway. See attached Figure 4-6. The cancer risk at nearby homes attributable to emissions from Richmond Parkway is 1.2 cancers per million. Total cumulative cancer risk (project + background) is estimated to equal 42 cancers per million.

Figure 4-5
Spatial Variation of Annual PM-2.5 Concentration
In micrograms per cubic meter
Operational Phase

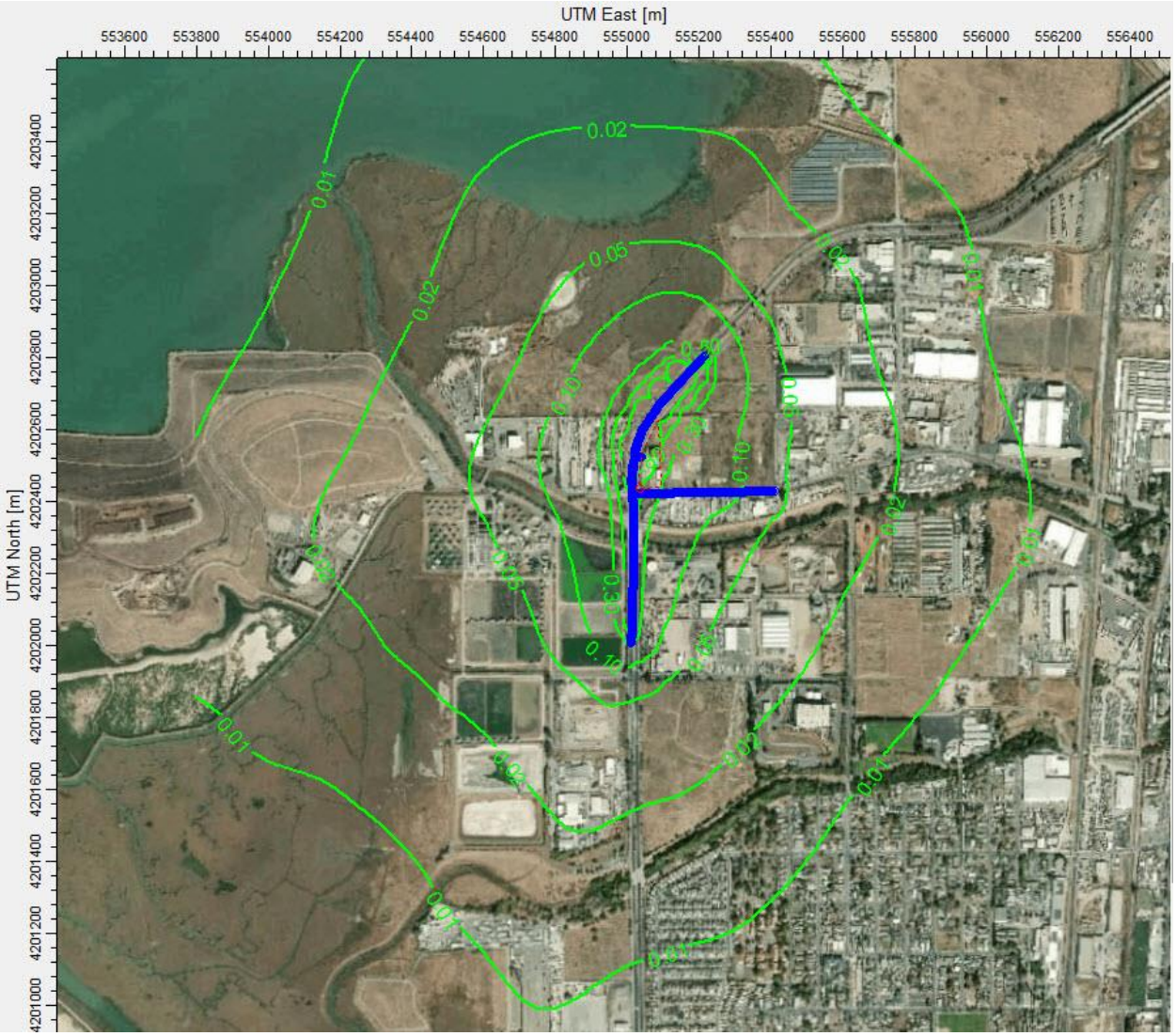
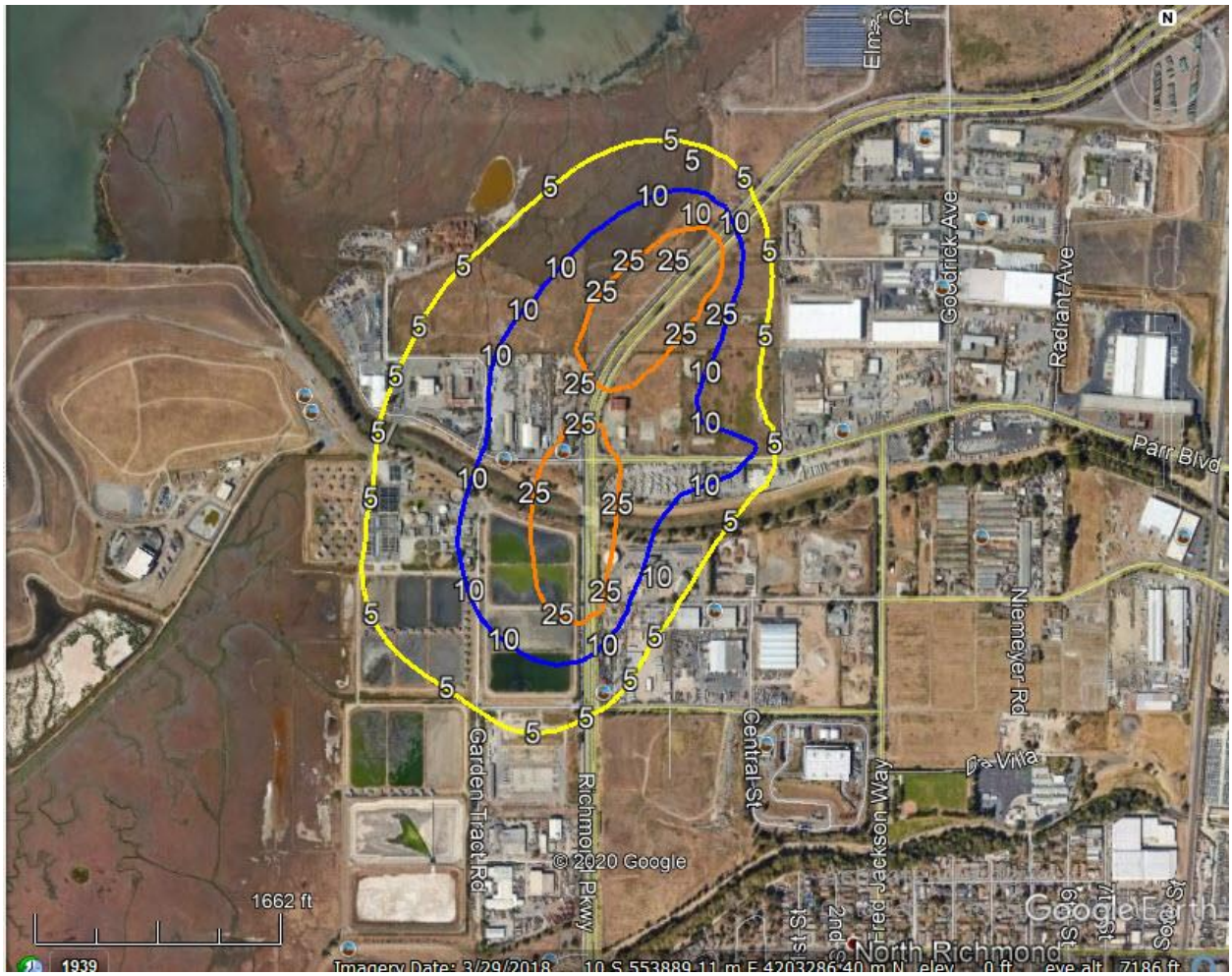


Figure 4-6
Spatial Variation of Background Residential Cancer Risk per Million



SECTION 5: RESULTS AND CONCLUSIONS

The results of the risk analysis are summarized in Table 5-1. They indicate that exposure to any TAC associated with the construction or operational phase would not result in a significant health impact.

Table 5-1
Summary of Maximum Health Risks at the Project Area

Risk Metric	Construction Phase	Operational (Occupancy) Phase	Significance Threshold	Significant?
Residential Cancer Risk	0.2 per million	0.16 per million	10 per million	No
Workplace Cancer Risk	0.344	0.56 per million	10 per million	No
Chronic Hazard Index	N/A	< 0.001	1.0	No
Acute Hazard Index	N/A	0.08	1.0	No
Annual PM-2.5 Concentration at Nearby Homes	N/A	0.015 ug/m3	0.3 ug/m3	No

The risk assessment process contains numerous, conservative assumption to ensure that public health risks are not underestimated. These assumptions are related to the exposure duration, toxicity data and use of Gaussian type statistical atmospheric dispersion models. For example, it is very unlikely any individual would remain at the same location for 30 years. As a result, this assumption substantially overstated the exposure and the health risks presented in this report.

SECTION 6: REFERENCES

BAAQMD (2017) "California Environmental Quality Act Air Quality Guidelines", Available at: https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

CalEPA (2012) "Technical Support Document for Exposure Assessment and Stochastic Analysis. Office of Environmental Health Hazard Assessment. California Environmental Protection Agency, August 2012.

CARB (2003) HARP User's Guide. Available at: http://www.arb.ca.gov/toxics/harp/harp.htm December 2003.

EPA (2004) "User's Guide for the AMS/EPA Regulatory Model – AERMOD". EPA Document No. EPA=454/B-03-001 September 2004.

OEHHA (2014) Consolidated Table of Approved health Risk Values. Cal EPA, Office of Environmental Health Hazard Assessment. Available at: file:///C:/2014%20Feather%20River%20AQMD/Hollycross%20Cemetary/OEHHA%20contable.pdf. July 3, 2014.

APPENDIX A

Summary of Construction Related Emissions

- CalEEMod Annual Construction Emissions
- Calculation of Off-Site Vehicular Emissions within 1,000 Feet

North Richmond Warehouse - Construction with Mitigation Measures

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	330.97	1000sqft	20.18	330,974.00	0
Parking Lot	401.45	1000sqft	9.22	401,446.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	5			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - This file is only for analysis of mitgated construction emissions. This file is not valid for other analyses.

Land Use - Quantities from 2/20/20 site plan.

Construction Phase - Construction schedule per Anderson pers. comm.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Demolition - Demoilition building square feet per Project Description.

Architectural Coating - Use architectural coatings with a VOC content of 28 g/L.

Vehicle Trips - Trip generation rate of 5.80 / KSF from Fehr & Peer 2020 and 2/20/20 site plan. Trip length per Fehr & Peers 2020. Apply seven days per week.

Area Coating - VOC content per BAAQMD Regulation 8.

Energy Use -

Construction Off-road Equipment Mitigation - Use Tier 4 (Final) construction equipment in demolition, site preparation, and grading phases of construction.

Area Mitigation -

Energy Mitigation - Title 24 2019 Standards per California Energy Commission 2018.

Fleet Mix - 69.79% LDA, 21.88% MDV, 8.33% HHD from Fehr & Peers 2020.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	28.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	28.00
tblArchitecturalCoating	EF_Parking	150.00	28.00
tblArchitecturalCoating	EF_Residential_Exterior	150.00	28.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	28.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	100
tblAreaCoating	Area_EF_Parking	150	100

tblAreaCoating	Area_EF_Residential_Exterior	150	100
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	18.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	30.00	15.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	45.00	22.00
tblConstructionPhase	NumDays	440.00	220.00
tblConstructionPhase	NumDays	35.00	17.00
tblConstructionPhase	NumDays	35.00	17.00
tblFleetMix	HHD	0.02	0.08
tblFleetMix	LDA	0.58	0.70
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.19	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.0830e-003	0.00
tblFleetMix	MCY	5.4540e-003	0.00
tblFleetMix	MDV	0.12	0.22
tblFleetMix	MH	8.7100e-004	0.00
tblFleetMix	MHD	0.01	0.00

tblFleetMix	OBUS	1.6050e-003	0.00
tblFleetMix	SBUS	2.7460e-003	0.00
tblFleetMix	UBUS	1.8100e-003	0.00
tblGrading	AcresOfGrading	110.00	112.50
tblLandUse	LandUseSquareFeet	330,970.00	330,974.00
tblLandUse	LandUseSquareFeet	401,450.00	401,446.00
tblLandUse	LotAcreage	7.60	20.18
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290

tblTripsAndVMT	WorkerTripNumber	30.00	15.00
tblTripsAndVMT	WorkerTripNumber	35.00	18.00
tblTripsAndVMT	WorkerTripNumber	40.00	20.00
tblTripsAndVMT	WorkerTripNumber	30.00	15.00
tblVehicleTrips	CC_TL	7.30	21.21
tblVehicleTrips	CNW_TL	7.30	21.21
tblVehicleTrips	CW_TL	9.50	21.21
tblVehicleTrips	ST_TR	1.68	5.80
tblVehicleTrips	SU_TR	1.68	5.80
tblVehicleTrips	WD_TR	1.68	5.80

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.7310	7.0353	5.8646	0.0141	0.7290	0.2973	1.0262	0.2745	0.2779	0.5525	0.0000	1,258.2074	1,258.2074	0.2041	0.0000	1,263.3107
2022	0.4954	0.3450	0.4190	8.1000e-004	0.0149	0.0161	0.0309	4.0100e-003	0.0150	0.0190	0.0000	71.7092	71.7092	0.0153	0.0000	72.0905
Maximum	**0.7310**	**7.0353**	**5.8646**	**0.0141**	**0.7290**	**0.2973**	**1.0262**	**0.2745**	**0.2779**	**0.5525**	**0.0000**	**1,258.2074**	**1,258.2074**	**0.2041**	**0.0000**	**1,263.3107**

Mitigated Construction

With Mitigation

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.5017	4.3298	5.9773	0.0141	0.7290	0.1562	0.8852	0.2745	0.1487	0.4232	0.0000	1,258.2065	1,258.2065	0.2041	0.0000	1,263.3099
2022	0.4934	0.3212	0.4206	8.1000e-004	0.0149	0.0147	0.0296	4.0100e-003	0.0138	0.0178	0.0000	71.7092	71.7092	0.0153	0.0000	72.0904
Maximum	**0.5017**	**4.3298**	**5.9773**	**0.0141**	**0.7290**	**0.1562**	**0.8852**	**0.2745**	**0.1487**	**0.4232**	**0.0000**	**1,258.2065**	**1,258.2065**	**0.2041**	**0.0000**	**1,263.3099**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**18.86**	**36.98**	**-1.82**	**0.00**	**0.00**	**45.46**	**13.47**	**0.00**	**44.55**	**22.84**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2021**	**3-31-2021**	2.5674	0.5680
2	**4-1-2021**	**6-30-2021**	1.7211	1.4002
3	**7-1-2021**	**9-30-2021**	1.7400	1.4156
4	**10-1-2021**	**12-31-2021**	1.7492	1.4248
5	**1-1-2022**	**3-31-2022**	0.8453	0.8146
		Highest	2.5674	1.4248

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4782	6.0000e-005	6.7600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Energy	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	208.0375	208.0375	0.0188	4.2500e-003	209.7735
Mobile	0.7374	8.9465	13.5079	0.0669	5.1337	0.0513	5.1850	1.3689	0.0481	1.4170	0.0000	6,192.1333	6,192.1333	0.1797	0.0000	6,196.6265
Waste						0.0000	0.0000		0.0000	0.0000	63.1525	0.0000	63.1525	3.7322	0.0000	156.4577
Water						0.0000	0.0000		0.0000	0.0000	24.2816	54.4768	78.7584	2.4994	0.0600	159.1278
Total	**2.2180**	**8.9691**	**13.5336**	**0.0671**	**5.1337**	**0.0530**	**5.1867**	**1.3689**	**0.0498**	**1.4187**	**87.4341**	**6,454.6607**	**6,542.0948**	**6.4302**	**0.0643**	**6,721.9994**

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	1.4782	6.0000e-005	6.7600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Energy	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	198.6505	198.6505	0.0184	4.0700e-003	200.3221
Mobile	0.7374	8.9465	13.5079	0.0669	5.1337	0.0513	5.1850	1.3689	0.0481	1.4170	0.0000	6,192.1333	6,192.1333	0.1797	0.0000	6,196.6265
Waste						0.0000	0.0000		0.0000	0.0000	63.1525	0.0000	63.1525	3.7322	0.0000	156.4577
Water						0.0000	0.0000		0.0000	0.0000	24.2816	54.4768	78.7584	2.4994	0.0600	159.1278
Total	**2.2174**	**8.9633**	**13.5287**	**0.0670**	**5.1337**	**0.0526**	**5.1863**	**1.3689**	**0.0494**	**1.4183**	**87.4341**	**6,445.2737**	**6,532.7078**	**6.4298**	**0.0641**	**6,712.5480**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.03**	**0.06**	**0.04**	**0.06**	**0.00**	**0.81**	**0.01**	**0.00**	**0.86**	**0.03**	**0.00**	**0.15**	**0.14**	**0.01**	**0.28**	**0.14**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2021	1/21/2021	5	15	
2	Site Preparation	Site Preparation	1/22/2021	2/4/2021	5	10	
3	Grading	Grading	2/5/2021	3/8/2021	5	22	
4	Building Construction	Building Construction	3/9/2021	1/10/2022	5	220	
5	Paving	Paving	1/11/2022	2/2/2022	5	17	
6	Architectural Coating	Architectural Coating	2/3/2022	2/25/2022	5	17	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 9.22

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 496,461; Non-Residential Outdoor: 165,487; Striped Parking Area: 24,087 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

North Richmond Warehouse - Construction with Mitigation Measures - Contra Costa County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	2	8.00	81	0.73
Demolition	Excavators	6	8.00	158	0.38
Demolition	Rubber Tired Dozers	4	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	6	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	8	8.00	97	0.37
Grading	Excavators	4	8.00	158	0.38
Grading	Graders	2	8.00	187	0.41
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	4	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Cranes	2	7.00	231	0.29
Building Construction	Forklifts	6	8.00	89	0.20
Building Construction	Generator Sets	2	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	6	7.00	97	0.37
Building Construction	Welders	2	8.00	46	0.45
Paving	Pavers	4	8.00	130	0.42
Paving	Paving Equipment	4	8.00	132	0.36
Paving	Rollers	4	8.00	80	0.38
Architectural Coating	Air Compressors	2	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	12	15.00	0.00	60.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	14	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	16	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	18	308.00	120.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	12	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	2	62.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.5000e-003	0.0000	6.5000e-003	9.8000e-004	0.0000	9.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0012	51.0012	0.0144	0.0000	51.3601
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**6.5000e-003**	**0.0233**	**0.0298**	**9.8000e-004**	**0.0216**	**0.0226**	**0.0000**	**51.0012**	**51.0012**	**0.0144**	**0.0000**	**51.3601**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3000e-004	8.0300e-003	1.5900e-003	2.0000e-005	5.1000e-004	3.0000e-005	5.3000e-004	1.4000e-004	2.0000e-005	1.6000e-004	0.0000	2.2468	2.2468	1.0000e-004	0.0000	2.2492
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.5800e-003	1.0000e-005	8.9000e-004	1.0000e-005	9.0000e-004	2.4000e-004	1.0000e-005	2.4000e-004	0.0000	0.7550	0.7550	2.0000e-005	0.0000	0.7554
Total	**5.8000e-004**	**8.2700e-003**	**4.1700e-003**	**3.0000e-005**	**1.4000e-003**	**4.0000e-005**	**1.4300e-003**	**3.8000e-004**	**3.0000e-005**	**4.0000e-004**	**0.0000**	**3.0018**	**3.0018**	**1.2000e-004**	**0.0000**	**3.0047**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.5000e-003	0.0000	6.5000e-003	9.8000e-004	0.0000	9.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0118	0.0716	0.3464	5.8000e-004		3.4000e-003	3.4000e-003		3.4000e-003	3.4000e-003	0.0000	51.0011	51.0011	0.0144	0.0000	51.3600
Total	**0.0118**	**0.0716**	**0.3464**	**5.8000e-004**	**6.5000e-003**	**3.4000e-003**	**9.9000e-003**	**9.8000e-004**	**3.4000e-003**	**4.3800e-003**	**0.0000**	**51.0011**	**51.0011**	**0.0144**	**0.0000**	**51.3600**

3.2 Demolition - 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	2.3000e-004	8.0300e-003	1.5900e-003	2.0000e-005	5.1000e-004	3.0000e-005	5.3000e-004	1.4000e-004	2.0000e-005	1.6000e-004	0.0000	2.2468	2.2468	1.0000e-004	0.0000	2.2492
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.5800e-003	1.0000e-005	8.9000e-004	1.0000e-005	9.0000e-004	2.4000e-004	1.0000e-005	2.4000e-004	0.0000	0.7550	0.7550	2.0000e-005	0.0000	0.7554
Total	**5.8000e-004**	**8.2700e-003**	**4.1700e-003**	**3.0000e-005**	**1.4000e-003**	**4.0000e-005**	**1.4300e-003**	**3.8000e-004**	**3.0000e-005**	**4.0000e-004**	**0.0000**	**3.0018**	**3.0018**	**1.2000e-004**	**0.0000**	**3.0047**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

Table A-1
Calculation Off-Site Emissions from
Truck Travel within 1,000 feet (0.19 Miles) of Project

Emissions from Trucks		Segment 1 South on Richmond Pkwy	Segment 2 North on Richmond Pkwy	Segment 3 East on Parr Bld
Percent of Total ==>		67%	30%	3%
HD Truck Vehicle Count				
Daily	*(truck trips/day)*	80	36	4
Annual	*(truck trips/yr)*	29,346	13,140	1,314
Emission Factors (PM-2.5)				
Vehicle Exhaust (Note 1)	*(grams/mile)*	0.019	0.019	0.019
Total		0.0	0.0	0.0
Distance Travelled				
1 Truck Trip	*(mile/truck trip)*	0.19	0.19	0.19
All Truck Trips	*(total miles/yr)*	5,576	2,497	250

Notes:
1. Emissions based on EMFAC 2017 for CY 2022 aggregate speed and model years
2. Daily vehicle count: 120 HD trucks/day

Ref: Per E-Mail from KD Anderson Oct 5, 2020

Table A-2
Calculation of Off-Site Emissions from Light Duty Vehicles

No. of Vehicles per Day	308	veh/day total
From KD Anderson Oct 5, 2020	112,420	veh/yr total
	56,210	veh/yr per 0.19 mile segment
Length of Roadway (1,000 ft)	0.19	mile
Annual Miles per Roadway Segment	10,680	miles/yr per 0.25 mile segment

	EF	Emission Rate (Vehicle Travel)			Emission Rate (vehicle travel + idle + start-up/shut down)	Segment 1 (lbs/yr)	Segment 2 (lbs/yr)	Segment 3 (lbs/yr)
TAC	(mg/mile)	(mg/yr)	(g/yr)	(lb/yr)	(lb/yr)	South on Richmond Pkwy	North on Richmond Pkwy	East on Parr Bld
						67%	30%	3%
1,3 Butadiene	4.48	47,846	47.846	0.105	0.1581	0.106	0.0474	0.00474
Benzene	45.28	483,586	483.586	1.065	2.1303	1.427	0.6391	0.06391
Formaldehyde	12.87	137,450	137.450	0.303	0.6055	0.406	0.1817	0.01817
Acetaldehyde	2.77	29,583	29.583	0.065	0.1303	0.087	0.0391	0.00391

NOTES
1. Emission Factors From: Zhu, Durbin, Norbeck and Cocker (July 2004)
"Internal Combustion Engine (ICE) Air Toxic Emissions"
Final Report to Research Division CARB, Sacramento, CA
2. Emissions from Vehicle Idle + start-up and shut-down estimated to equal 50% of emissions from vehicle travel
3. Lbs/hr = [lbs/yr] / [2,080 hrs/yr] Assumes 8hr/day construction 5 days per week

Segment 1 (lbs/hr)	Segment 2 (lbs/hr)	Segment 3 (lbs/hr)
67%	30%	3%
5.09E-05	2.28E-05	2.28E-06
6.86E-04	3.07E-04	3.07E-05
1.95E-04	8.73E-05	8.73E-06
4.20E-05	1.88E-05	1.88E-06

APPENDIX B

Traffic Data

Source: Fehr & Peers Traffic Engineers

Table 6: Project VMT Generated

Vehicle Type	Daily Trips[1]	Average Distance (One-Way)	VMT
Building 1 – Warehouse/Distribution Uses			
Automobiles	115	20.53	2,361
Heavy Vehicles	55	28.61	1,574
Total – Building 1 (Rounded)	**170**	--	**3,940**
Building 2 – Parcel Distribution Center			
Automobiles	1,220	20.53	25,050
Package and Delivery Vans	420	20.53	8,624
Spot Trailers	60	28.61	1,716
Linehauls	50	28.61	1,430
Total – Building 2 (Rounded)	**1,750**	**--**	**36,820**
Total Scannell Project	**1,920**	**--**	**40,760**

APPENDIX C

Detailed Emission Calculations

Table C-1
Calculation of On-Site PM-2.5 (DPM) Emissions

IDLING EMISSIONS	Units	
HD Trucks Count	*(trucks/day)*	165
Emission Factor for Vehicle Idling (Note 1)	*(grams/vehicle-day)*	0.004595
Emissions from Truck Idling		
Per truck	*(grams/truck)*	4.60E-03
All Trucks (per day)	*(grams/day)*	7.58E-01
All Trucks (per year)	*(grams/year)*	276.75
	(lbs/yr)	0.610

EMISSIONS FROM On-Site Truck Movement	Units	
Daily Truck Volume	*(trucks/day)*	165
Distrance Travelled On-Site		
1 Truck	*(mile/truck)*	0.10
All Trucks/day	*(miles/day)*	16.50
All Trucks (per year)	*(miles/yr)*	6,023
Emission Factor (EMFAC 2017 for HD Trucks CY 2026)	*(gram/mile)*	0.01901
Emissions		
1 Truck (per mile)	*(grams/mile)*	0.01901
All Trucks (per day)	*(grams/day)*	0.31364
All Trucks (per year)	*(grams/yr)*	114.48
	(lbs/yr)	0.252

EMISSIONS FROM TRUs	Units	
No. of Trucks (5.2% of all HD Trucks)	*(trucks with TRUs/day)*	8.6
TRU Operating Time		
1 TRU	*(min)*	15
All TRUs	*(hrs/day)*	2.1
Average TRU Engine Size	*(hp)*	25
Emission Factor for TRUs (Note 2)	*(grams/hp-hr)*	0.03
Load Factor (Note 3)		0.46
Emission Rate		
1 Truck (engine HP x EF x Load Factor)	*(grams/hr)*	0.35
All Trucks (x daily operating hrs for all trucks)	*(grams/day)*	0.74
(x365)	*(grams/yr)*	270.1
(1 lb/454 grams)	*(lbs/yr)*	0.595
TOTAL On-Site (Idling +On-Site Move't+TRUs)	*(lbs/yr)*	1.10

Notes

Table C-2
Calculation of Off-Site Truck Emissions

Emissions from Trucks		Segment 1 South on Richmond Pkwy	Segment 2 North on Richmond Pkwy	Segment 3 East on Parr Bld
Percent of Total		67%	30%	3%
HD Truck Vehicle Count				
Daily	*(truck trips/day)*	111	50	5
Annual	*(truck trips/yr)*	40,351	18,068	1,807
Emission Factors (PM-2.5)				
Brake+TireWear (Note 2)	*(grams/mile)*	0.0589	0.0589	0.0589
Re-suspension of Road Dust (Note 3)	*(grams/mile)*	17.77	17.77	17.77
Total		17.8	17.8	17.8
Distance Travelled				
1 Truck Trip	*(mile/truck trip)*	0.19	0.19	0.19
All Truck Trips	*(total miles/yr)*	7,667	3,433	343
Emissions (Brake + Tire)	*(grams/yr)*	136,705	61,211	6,121
	(lbs/yr)	301.11	134.83	13.48

Notes:
1. Emissions based on EMFAC 2017 for CY 2022 aggregate speed and model years
2. Daily vehicle count: 165 HD trucks/day
3. Emissions Model: Ref: AP-42 Section 13.2.1 January 2011

$$E = k\,(sL/2)^{0.65}\,(W/3)^{1.5} \qquad (2\text{-}5)$$

where:
- E = particulate emission factor (having units matching the units of k)
- k = particle size multiplier for particle size range and units of interest (see below),
- sL = road surface silt loading (grams per square meter) (g/m2), and
- W = average weight (tons) of the vehicles traveling the road.

The selection of the value for the independent variable for the particle size multiplier was based upon the units of the emissions factor desired and the size range for the emissions.

Particle Size Multipliers for Paved Road Equation

Size Range	Multiplier k		
	g/VKT	g/VMT	lb/VMT
$PM_{2.5}$	2.1	3.3	0.0073
PM_{10}	4.6	7.3	0.016
PM_{15}	5.5	9.0	0.020
PM_{30}	24	38	0.082

Model input Values:

k	3.3	g/VMT
sL	0.2	g/m2
W	25	tons/vehicle
E=	17.772	g/VMT

Table C-3
Calculation of Toxic Emissions from Automobile Traffic within 0.19 mile of Project Site

No. of Vehicles per Day	1,335	veh/day total
	487,275	veh/yr total
	243,638	veh/yr per 0.25 mile segment
Length of Roadway	0.19	mile
Annual Miles per Roadway Segment	46,291	miles/yr per 0.19 mile segment

	EF	Emission Rate (Vehicle Travel)			Emission Rate (vehicle travel + idle + start-up/shut down)
TAC	(mg/mile)	(mg/yr)	(g/yr)	(lb/yr)	(lb/yr)
1,3 Butadiene	4.48	207,384	207.384	0.457	0.6852
Benzene	45.28	2,096,062	2096.062	4.617	9.2338
Formaldehyde	12.87	595,767	595.767	1.312	2.6245
Acetaldehyde	2.77	128,226	128.226	0.282	0.5649

NOTES

1. Emission Factors From: Zhu, Durbin, Norbeck and Cocker (July 2004)
"Internal Combustion Engine (ICE) Air Toxic Emissions"
Final Report to Research Division CARB, Sacramento, CA

2. Traffic volume based on estimates in ITE Trip Generation Rates (10th Ed) for Land Use 945
"Gasoline/Service Station with Convenience Market"

3. Emissions from Vehicle Idle + start-up and shut-down estimated to equal 50% of emissions from vehicle travel

Table C-4

Calculation of DPM Emissions from
Truck Travel within 0.19 Miles of Project

Emissions from Trucks		Segment 1	Segment 2	Segment 3
		South on Richmond Pkwy	North on Richmond Pkwy	East on Parr Bld
Percent of Total		67%	30%	3%
HD Truck Vehicle Count				
Daily	*(truck trips/day)*	111	50	5
Annual	*(truck trips/yr)*	40,351	18,068	1,807
Emission Factor for Vehicle Movement (Note 1)	*(grams/mile)*	0.0190	0.0190	0.0190
Distance Travelled				
1 Truck Trip	*(mile/truck trip)*	0.25	0.25	0.25
All Truck Trips	*(total miles/yr)*	10,088	4,517	452
Emissions of DPM	*(grams/yr)*	192	86	9
	(lbs/yr)	0.422	0.19	0.02

Notes:
1. Emissions based on EMFAC 2017 for CY 2022 aggregate speed and model years
2. Daily vehicle count: 165 HD trucks/day

APPENDIX D

Excerpts of AERMOD Model Report

```
**
****************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.8.3
** Lakes Environmental Software Inc.
** Date: 5/16/2020
** File: C:\Lakes\AERMOD View\PAR1_CONST\PAR1_CONST.ADI
**
****************************************
**
**
****************************************
** AERMOD Control Pathway
****************************************
**
**
CO STARTING
   TITLEONE C:\Lakes\AERMOD View\PAR1_CONST\PAR1_CONST.isc
   TITLETWO Construction Phase 1 Poly Area Source - Plot Files Export to HARP
   MODELOPT DFAULT CONC
   AVERTIME 1 PERIOD
   POLLUTID DPM
   RUNORNOT RUN
   ERRORFIL PAR1_CONST.err
CO FINISHED
**
****************************************
** AERMOD Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   555034.977  4202438.311        2.100
** DESCRSRC Main Project Area
** Source Parameters **
   SRCPARAM PAREA1        0.000129     5.000         6
   AREAVERT PAREA1       555034.977 4202438.311 555094.922 4202441.641
   AREAVERT PAREA1       555085.764 4202626.473 555050.796 4202558.202
   AREAVERT PAREA1       555039.140 4202519.903 555031.647 4202478.274
   SRCGROUP PAREA1   PAREA1
   SRCGROUP ALL
SO FINISHED
**
****************************************
** AERMOD Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED PAR1_CONST.rou
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
```

```
**
ME STARTING
   SURFFILE ..\chev13_17.sfc
   PROFFILE ..\chev13_17.pfl
   SURFDATA 23230 2013 OAKLAND/WSO_AP
   UAIRDATA 23230 2013 OAKLAND/WSO_AP
   SITEDATA 2703 2013
   PROFBASE 1.5 METERS
   STARTEND 2017 1 1 1 2017 12 31 24
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 PAREA1 1ST PAR1_CONST.AD\01H1G001.PLT 31
   PLOTFILE 1 ALL 1ST PAR1_CONST.AD\01H1GALL.PLT 32
   PLOTFILE PERIOD PAREA1 PAR1_CONST.AD\PE00G000.PLT 33
   PLOTFILE PERIOD ALL PAR1_CONST.AD\PE00GALL.PLT 34
   SUMMFILE PAR1_CONST.sum
OU FINISHED


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

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

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


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


    ********   WARNING MESSAGES   ********
 MX W403      69       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data

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

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** MODEL SETUP OPTIONS SUMMARY ***

- - - -

b for Both Calm and Missing Hours

```
**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     1.50 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      4.1 MB of RAM.

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

**Detailed Error/Message File:   PAR1_CONST.err
**File for Summary of Results:   PAR1_CONST.sum
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
PAREA1	0	0.12900E-03	555035.0	4202438.3	2.1	5.00	6	0.00	NO	

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
PAREA1	PAREA1 ,
ALL	PAREA1 ,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

*** X-COORDINATES OF GRID ***
(METERS)

553801.5,	553851.5,	553901.5,	553951.5,	554001.5,	554051.5,	554101.5,	554151.5,	554201.5,	554251.5,
554301.5,	554351.5,	554401.5,	554451.5,	554501.5,	554551.5,	554601.5,	554651.5,	554701.5,	554751.5,
554801.5,	554851.5,	554901.5,	554951.5,	555001.5,	555051.5,	555101.5,	555151.5,	555201.5,	555251.5,
555301.5,	555351.5,	555401.5,	555451.5,	555501.5,	555551.5,	555601.5,	555651.5,	555701.5,	555751.5,
555801.5,	555851.5,	555901.5,	555951.5,	556001.5,	556051.5,	556101.5,	556151.5,	556201.5,	556251.5,
556301.5,	556351.5,	556401.5,	556451.5,	556501.5,	556551.5,	556601.5,	556651.5,	556701.5,	556751.5,

*** Y-COORDINATES OF GRID ***
(METERS)

4200702.0,	4200752.0,	4200802.0,	4200852.0,	4200902.0,	4200952.0,	4201002.0,	4201052.0,	4201102.0,	4201152.0,
4201202.0,	4201252.0,	4201302.0,	4201352.0,	4201402.0,	4201452.0,	4201502.0,	4201552.0,	4201602.0,	4201652.0,
4201702.0,	4201752.0,	4201802.0,	4201852.0,	4201902.0,	4201952.0,	4202002.0,	4202052.0,	4202102.0,	4202152.0,
4202202.0,	4202252.0,	4202302.0,	4202352.0,	4202402.0,	4202452.0,	4202502.0,	4202552.0,	4202602.0,	4202652.0,
4202702.0,	4202752.0,	4202802.0,	4202852.0,	4202902.0,	4202952.0,	4203002.0,	4203052.0,	4203102.0,	4203152.0,
4203202.0,	4203252.0,	4203302.0,	4203352.0,	4203402.0,	4203452.0,	4203502.0,	4203552.0,	4203602.0,	4203652.0,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

* HILL HEIGHT SCALES IN METERS *

Y-COORD (METERS)	X-COORD (METERS) 556501.48	556551.48	556601.48	556651.48	556701.48	556751.48
4201652.04	9.00	9.00	9.80	10.30	11.00	11.00
4201602.04	8.90	9.00	10.00	10.30	11.00	11.00
4201552.04	8.90	9.80	10.00	10.00	10.90	11.00
4201502.04	9.00	9.90	10.00	10.00	10.90	11.00
4201452.04	9.30	10.00	10.00	10.00	10.00	11.00
4201402.04	9.90	10.00	10.00	10.00	10.00	11.00
4201352.04	10.00	10.00	10.00	10.00	10.00	10.60
4201302.04	10.00	10.00	10.00	10.00	10.00	10.60
4201252.04	10.00	10.00	10.00	10.00	10.00	10.90
4201202.04	10.00	10.00	10.00	10.10	11.00	11.00
4201152.04	10.00	10.00	10.10	10.40	11.00	11.10
4201102.04	10.20	10.80	10.90	11.00	11.00	11.60
4201052.04	11.00	11.00	11.00	11.10	12.00	12.00
4201002.04	11.00	11.00	11.10	12.00	12.00	12.10
4200952.04	11.00	11.80	12.00	12.00	12.00	12.90
4200902.04	11.60	12.00	12.00	12.60	13.00	13.00
4200852.04	12.00	12.10	13.00	13.00	13.00	13.10
4200802.04	12.20	13.00	13.00	13.20	13.80	14.00
4200752.04	12.30	13.00	13.00	14.00	14.00	14.00
4200702.04	12.30	13.00	13.00	13.90	14.00	14.00

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

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

```
( 554960.8, 4202465.2,       2.0,       2.0,       0.0);         ( 554889.4, 4202471.7,       2.0,       2.0,       0.0);
( 555317.9, 4202392.1,       3.0,       3.0,       0.0);
```

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

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

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1
```

METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2017 1 1 1
AND END DATE: 2017 12 31 24

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

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

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

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

Surface file: ..\chev13_17.sfc Met Version: 18081
Profile file: ..\chev13_17.pfl
Surface format: FREE
Profile format: FREE
Surface station no.: 23230 Upper air station no.: 23230
Name: OAKLAND/WSO_AP Name: OAKLAND/WSO_AP
Year: 2013 Year: 2013

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
13	01	01	1	01	-6.3	0.084	-9.000	-9.000	-999.	58.	8.4	0.17	0.63	1.00	1.70	173.	10.0	279.9	8.8
13	01	01	1	02	-9.2	0.134	-9.000	-9.000	-999.	117.	23.7	0.15	0.63	1.00	2.10	93.	10.0	278.4	8.8
13	01	01	1	03	-6.5	0.086	-9.000	-9.000	-999.	61.	9.0	0.15	0.63	1.00	1.80	63.	10.0	278.4	8.8
13	01	01	1	04	-11.3	0.164	-9.000	-9.000	-999.	160.	35.8	0.19	0.63	1.00	2.20	25.	10.0	278.5	8.8
13	01	01	1	05	-15.9	0.232	-9.000	-9.000	-999.	268.	71.3	0.19	0.63	1.00	2.70	43.	10.0	278.8	8.8
13	01	01	1	06	-25.3	0.368	-9.000	-9.000	-999.	537.	180.2	0.15	0.63	1.00	4.10	72.	10.0	278.9	8.8
13	01	01	1	07	-24.5	0.242	-9.000	-9.000	-999.	296.	52.9	0.15	0.63	1.00	3.10	64.	10.0	278.5	8.8
13	01	01	1	08	-28.7	0.284	-9.000	-9.000	-999.	363.	72.7	0.19	0.63	1.00	3.30	56.	10.0	278.1	8.8
13	01	01	1	09	1.9	0.246	0.106	0.005	23.	293.	-724.2	0.19	0.63	0.38	2.40	49.	10.0	278.5	8.8
13	01	01	1	10	39.2	0.414	0.490	0.007	109.	639.	-164.7	0.19	0.63	0.25	3.90	42.	10.0	279.9	8.8
13	01	01	1	11	68.1	0.405	0.767	0.007	241.	619.	-88.9	0.19	0.63	0.20	3.70	26.	10.0	280.8	8.8
13	01	01	1	12	84.6	0.456	1.112	0.008	592.	738.	-102.1	0.19	0.63	0.19	4.20	26.	10.0	281.6	8.8
13	01	01	1	13	87.7	0.532	1.277	0.007	865.	929.	-156.0	0.19	0.63	0.18	5.00	50.	10.0	282.8	8.8
13	01	01	1	14	77.3	0.596	1.242	0.005	903.	1103.	-249.4	0.19	0.63	0.19	5.70	58.	10.0	283.8	8.8
13	01	01	1	15	53.8	0.729	1.108	0.005	920.	1489.	-653.8	0.15	0.63	0.22	7.50	62.	10.0	284.4	8.8
13	01	01	1	16	19.4	0.459	0.790	0.007	925.	827.	-454.5	0.15	0.63	0.31	4.70	72.	10.0	284.4	8.8
13	01	01	1	17	-32.5	0.383	-9.000	-9.000	-999.	578.	157.6	0.15	0.63	0.54	4.30	78.	10.0	283.9	8.8
13	01	01	1	18	-22.8	0.210	-9.000	-9.000	-999.	256.	36.9	0.15	0.63	1.00	2.90	99.	10.0	282.6	8.8
13	01	01	1	19	-12.8	0.118	-9.000	-9.000	-999.	103.	11.7	0.17	0.63	1.00	2.40	124.	10.0	281.8	8.8
13	01	01	1	20	-1.7	0.043	-9.000	-9.000	-999.	25.	4.2	0.15	0.63	1.00	0.90	336.	10.0	281.1	8.8
13	01	01	1	21	-2.6	0.053	-9.000	-9.000	-999.	29.	5.2	0.15	0.63	1.00	1.10	304.	10.0	281.2	8.8
13	01	01	1	22	-5.5	0.077	-9.000	-9.000	-999.	51.	7.5	0.15	0.63	1.00	1.60	94.	10.0	280.6	8.8
13	01	01	1	23	-3.4	0.061	-9.000	-9.000	-999.	36.	6.1	0.19	0.63	1.00	1.20	19.	10.0	279.0	8.8
13	01	01	1	24	-6.7	0.086	-9.000	-9.000	-999.	60.	8.6	0.19	0.63	1.00	1.70	30.	10.0	278.2	8.8

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
13	01	01	01	8.8	0	-999.	-99.00	280.0	999.0	-99.00	-99.00
13	01	01	01	10.0	1	173.	1.70	-999.0	25.2	-99.00	0.68

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

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE PERIOD (8760 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 553801.48	553851.48	553901.48	553951.48	554001.48	554051.48	554101.48	554151.48	554201.48
4203652.04	0.95535	0.99603	1.03834	1.08244	1.12847	1.17666	1.22706	1.27936	1.33288
4203602.04	0.97954	1.02327	1.06902	1.11683	1.16671	1.21894	1.27366	1.33086	1.39009
4203552.04	1.00350	1.05005	1.09927	1.15101	1.20527	1.26203	1.32159	1.38408	1.44938
4203502.04	1.02780	1.07662	1.12901	1.18468	1.24346	1.30542	1.37046	1.43885	1.51063
4203452.04	1.05374	1.10389	1.15868	1.21784	1.28115	1.34841	1.41953	1.49450	1.57354
4203402.04	1.08253	1.13333	1.18944	1.25118	1.31843	1.39083	1.46815	1.55041	1.63750
4203352.04	1.11584	1.16650	1.22315	1.28628	1.35616	1.43289	1.51614	1.60573	1.71094
4203302.04	1.15490	1.20530	1.26176	1.32524	1.39648	1.47596	1.56522	1.67251	1.77794
4203252.04	1.20058	1.25109	1.30734	1.37061	1.44208	1.52408	1.62618	1.72881	1.84236
4203202.04	1.25268	1.30451	1.36140	1.42469	1.49594	1.58473	1.68263	1.78835	1.90788
4203152.04	1.31050	1.36507	1.42416	1.48885	1.56067	1.65032	1.74884	1.85585	1.97852
4203102.04	1.37280	1.43175	1.49480	1.56287	1.63729	1.73507	1.82917	1.93657	2.06039
4203052.04	1.43843	1.50306	1.57189	1.64562	1.72512	1.82867	1.92602	2.03539	2.16030
4203002.04	1.50731	1.57825	1.65407	1.73519	1.82947	1.93503	2.03921	2.15413	2.28309
4202952.04	1.58099	1.65819	1.74131	1.83085	1.92735	2.05190	2.16664	2.29190	2.43006
4202902.04	1.66202	1.74539	1.83587	1.93390	2.04033	2.17838	2.30632	2.44601	2.59909
4202852.04	1.75268	1.84270	1.94067	2.04742	2.16415	2.31636	2.45894	2.61554	2.78774
4202802.04	1.86758	1.96855	2.07705	2.19585	2.32623	2.46955	2.62766	2.80272	2.99678
4202752.04	1.95983	2.07132	2.20569	2.33657	2.48045	2.63925	2.81524	3.01080	3.22930
4202702.04	2.06872	2.19777	2.33941	2.48444	2.64445	2.82153	3.01845	3.23838	3.48519
4202652.04	2.17496	2.32474	2.47203	2.63228	2.81005	3.00771	3.22834	3.47608	3.75566
4202602.04	2.27978	2.43943	2.59785	2.77358	2.96911	3.18773	3.43323	3.71037	4.02515
4202552.04	2.37971	2.54178	2.71252	2.90257	3.11480	3.35316	3.62229	3.92785	4.27688
4202502.04	2.46812	2.63120	2.81264	3.01531	3.24242	3.49832	3.78850	4.11954	4.45599
4202452.04	2.53594	2.70690	2.89748	3.11093	3.35107	3.62253	3.93132	4.28522	4.68125
4202402.04	2.59384	2.77219	2.97146	3.19508	3.44753	3.73408	4.06088	4.41461	4.83915
4202352.04	2.64958	2.83601	3.04468	3.27958	3.54518	3.80270	4.14093	4.52918	4.97751
4202302.04	2.71215	2.90753	3.12656	3.37310	3.65129	3.92127	4.27270	4.67353	5.13177
4202252.04	2.78441	2.98790	3.21482	3.46910	3.75356	4.02594	4.37654	4.76905	5.20752
4202202.04	2.85694	3.06330	3.29098	3.54220	3.81895	4.07634	4.40260	4.75779	5.14942
4202152.04	2.89525	3.10986	3.32643	3.56023	3.81186	4.07221	4.31457	4.60891	4.98116
4202102.04	2.92300	3.10537	3.27995	3.47746	3.71379	3.93421	4.15661	4.39298	4.62917
4202052.04	2.88275	3.03659	3.17976	3.36580	3.53416	3.70486	3.87703	4.05108	4.22868
4202002.04	2.77026	2.89006	3.03079	3.17300	3.30227	3.43241	3.56441	3.70038	3.84348
4201952.04	2.64264	2.75291	2.85259	2.95237	3.05314	3.15660	3.26480	3.38046	3.50730
4201902.04	2.49316	2.57151	2.65053	2.73119	2.81494	2.90385	3.00032	3.10717	3.22645
4201852.04	2.32680	2.39105	2.45755	2.52751	2.60263	2.68507	2.77661	2.87867	2.99227
4201802.04	2.16800	2.22413	2.28406	2.34915	2.42077	2.50016	2.58849	2.68584	2.79170
4201752.04	2.02432	2.07654	2.13365	2.19671	2.26643	2.34341	2.42742	2.51798	2.61422
4201702.04	1.89831	1.94906	2.00492	2.06665	2.13425	2.20729	2.28516	2.36729	2.45348

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE PERIOD (8760 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 553801.48	553851.48	553901.48	553951.48	554001.48	554051.48	554101.48	554151.48	554201.48
4201652.04	1.78955	1.83952	1.89435	1.95393	2.01783	2.08529	2.15588	2.22944	2.30717
4201602.04	1.69553	1.74455	1.79738	1.85350	1.91225	1.97323	2.03653	2.10298	2.17517
4201552.04	1.61331	1.66033	1.70991	1.76137	1.81431	1.86906	1.92633	1.98831	2.05761
4201502.04	1.53954	1.58351	1.62881	1.67512	1.72270	1.77236	1.82594	1.88566	1.95426
4201452.04	1.47161	1.51164	1.55230	1.59395	1.63731	1.68384	1.73558	1.79480	1.86378
4201402.04	1.40746	1.44336	1.48000	1.51804	1.55872	1.60388	1.65526	1.71487	1.78461
4201352.04	1.34624	1.37863	1.41217	1.44801	1.48757	1.53247	1.58435	1.64478	1.71447
4201302.04	1.28795	1.31766	1.34940	1.38423	1.42360	1.46910	1.52183	1.58265	1.65187
4201252.04	1.23288	1.26104	1.29190	1.32682	1.36679	1.41302	1.46641	1.52706	1.59516
4201202.04	1.18160	1.20905	1.24010	1.27551	1.31629	1.36322	1.41666	1.47669	1.54301
4201152.04	1.13440	1.16209	1.19366	1.22987	1.27143	1.31863	1.37168	1.43040	1.49438
4201102.04	1.09167	1.11986	1.15219	1.18914	1.23118	1.27825	1.33040	1.38728	1.44857
4201052.04	1.05309	1.08195	1.11503	1.15247	1.19459	1.24112	1.29208	1.34691	1.40522
4201002.04	1.01849	1.04808	1.08163	1.11930	1.16100	1.20658	1.25587	1.30854	1.36352
4200952.04	0.98738	1.01754	1.05135	1.08895	1.13001	1.17432	1.22178	1.27192	1.32362
4200902.04	0.95934	0.98975	1.02365	1.06062	1.10073	1.14371	1.18918	1.23633	1.28497
4200852.04	0.93388	0.96445	0.99804	1.03426	1.07319	1.11465	1.15784	1.20222	1.24738
4200802.04	0.91055	0.94096	0.97398	1.00933	1.04692	1.08650	1.12725	1.16912	1.20793
4200752.04	0.88571	0.91710	0.94934	0.98348	1.01964	1.05709	1.09473	1.13416	1.17530
4200702.04	0.86894	0.89826	0.92928	0.96286	0.99756	1.03293	1.06924	1.10534	1.13849

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE PERIOD (8760 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: PAREA1 ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 554251.48	554301.48	554351.48	554401.48	554451.48	554501.48	554551.48	554601.48	554651.48
4203652.04	1.38652	1.43845	1.48628	1.52763	1.56075	1.58496	1.59995	1.60605	1.60320
4203602.04	1.45034	1.51016	1.56715	1.61837	1.66132	1.69449	1.71716	1.72934	1.73118
4203552.04	1.51674	1.58480	1.65159	1.71390	1.76848	1.81268	1.84519	1.86549	1.87365
4203502.04	1.58555	1.66251	1.73963	1.81426	1.88224	1.94001	1.98501	2.01595	2.03262
4203452.04	1.65659	1.74311	1.83154	1.91930	2.00255	2.07652	2.13713	2.18200	2.21015
4203402.04	1.72955	1.82640	1.92706	2.02919	2.12936	2.22217	2.30200	2.36491	2.40846
4203352.04	1.81354	1.92220	2.03665	2.15505	2.27423	2.37675	2.48004	2.56583	2.62987
4203302.04	1.89144	2.01294	2.14217	2.27810	2.41812	2.55767	2.68752	2.79537	2.87667
4203252.04	1.96662	2.10145	2.24675	2.40180	2.56484	2.73187	2.89578	3.04657	3.17365
4203202.04	2.04147	2.18943	2.35135	2.52708	2.71539	2.91319	3.11429	3.30803	3.48086
4203152.04	2.11870	2.27741	2.45526	2.65209	2.86748	3.09941	3.34267	3.58733	3.81782
4203102.04	2.20382	2.36970	2.56010	2.77641	3.01903	3.28713	3.57737	3.88118	4.18245
4203052.04	2.30505	2.47418	2.67231	2.90336	3.16997	3.47378	3.81355	4.18371	4.56983
4203002.04	2.43036	2.60161	2.80325	3.04268	3.32668	3.66051	4.04802	4.48771	4.97043
4202952.04	2.58481	2.76126	2.96682	3.21072	3.50406	3.85831	4.28396	4.78868	5.37249
4202902.04	2.76824	2.95758	3.17345	3.42511	3.72538	4.09097	4.54084	5.09516	5.77019
4202852.04	2.97798	3.18919	3.42631	3.69695	4.01262	4.39080	4.85634	5.44089	6.18173
4202802.04	3.21252	3.45313	3.72285	4.02766	4.37676	4.78469	5.27534	5.88532	6.66739
4202752.04	3.47402	3.74944	4.06046	4.41341	4.81660	5.28229	5.82964	6.49144	7.32186
4202702.04	3.76345	4.07889	4.43848	4.85071	5.32588	5.87743	6.52368	7.29285	8.23125
4202652.04	4.07287	4.43505	4.85117	5.33276	5.89446	6.55482	7.33827	8.27736	9.41867
4202602.04	4.37240	4.73663	5.25138	5.83802	6.49897	7.28641	8.23528	9.39315	10.82550
4202552.04	4.60694	5.05925	5.58664	6.33023	7.09617	8.02094	9.15251	10.55889	12.55878
4202502.04	4.86417	5.36320	5.94986	6.68811	7.64618	8.70588	10.02029	11.67953	14.06529
4202452.04	5.10684	5.70838	6.36513	7.16480	8.13722	9.31649	10.78764	12.65279	15.32555
4202402.04	5.34874	5.97645	6.68516	7.53335	8.55923	9.58749	11.24584	13.27911	15.96272
4202352.04	5.49796	6.19607	6.93916	7.80568	8.83292	9.82958	11.50807	12.91641	15.57691
4202302.04	5.68283	6.35708	7.06419	7.87348	8.79599	9.63025	11.02064	12.05518	14.13270
4202252.04	5.78024	6.33570	6.94827	7.61860	8.34562	8.94093	9.76952	10.74040	12.10134
4202202.04	5.63436	6.08431	6.55983	7.05825	7.57952	8.12752	8.76121	9.52704	10.29019
4202152.04	5.30696	5.64274	5.98835	6.34661	6.72445	7.13477	7.69872	8.25371	8.74752
4202102.04	4.86988	5.11688	5.37480	5.65151	5.95703	6.30391	6.79336	7.26689	7.67858
4202052.04	4.41272	4.60821	4.82142	5.06034	5.33204	5.64211	6.06894	6.48344	6.97501
4202002.04	3.99815	4.16948	4.36246	4.58102	4.82750	5.10372	5.47677	5.84651	6.29838
4201952.04	3.64882	3.80819	3.98729	4.18675	4.40691	4.66692	4.98420	5.32708	5.75414
4201902.04	3.36017	3.50898	3.67244	3.85083	4.04648	4.29349	4.57519	4.90235	5.30765
4201852.04	3.11721	3.25285	3.39910	3.55810	3.73612	3.96649	4.23607	4.55048	4.93088
4201802.04	2.90555	3.02689	3.15767	3.30293	3.47088	3.69222	3.95288	4.25194	4.60269
4201752.04	2.71606	2.82498	2.94495	3.08262	3.24594	3.46111	3.71148	3.99196	4.30972
4201702.04	2.54515	2.64549	2.75966	2.89406	3.05493	3.26337	3.50077	3.75960	4.04332

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 556051.48	556101.48	556151.48	556201.48	556251.48
4201652.0	160.17722 (17103024)	171.68411 (17041101)	188.21153 (17041101)	199.83873 (17041101)	222.77590 (17041101)
4201602.0	145.90389 (17103024)	148.01111 (17103024)	152.80010 (17041101)	177.56649 (17103024)	173.38310 (17103024)
4201552.0	134.38726 (17032303)	135.41985 (17103024)	137.76413 (17103024)	166.91190 (17103024)	168.55390 (17103024)
4201502.0	134.34634 (17032303)	125.98581 (17032303)	126.14021 (17103024)	151.26861 (17103024)	157.31025 (17103024)
4201452.0	131.84129 (17032303)	126.04659 (17032303)	118.44781 (17032303)	131.56370 (17103024)	141.34395 (17103024)
4201402.0	127.29274 (17032303)	123.93695 (17032303)	118.58803 (17032303)	133.24957 (17032303)	123.64513 (17111720)
4201352.0	121.33015 (17032303)	119.99135 (17032303)	116.81099 (17032303)	138.36794 (17032303)	126.96029 (17032303)
4201302.0	114.02916 (17032303)	114.62735 (17032303)	113.37772 (17032303)	138.72524 (17032303)	131.17051 (17032303)
4201252.0	111.12342 (17100406)	108.11109 (17032303)	108.65003 (17032303)	135.38838 (17032303)	131.72031 (17032303)
4201202.0	123.94425 (17100406)	100.70699 (17032303)	102.85853 (17032303)	128.90662 (17032303)	128.91226 (17032303)
4201152.0	134.90262 (17100406)	110.69250 (17100406)	112.94318 (17032303)	119.96725 (17032303)	123.27300 (17032303)
4201102.0	143.38663 (17100406)	109.88480 (17100406)	100.34081 (17032303)	109.33879 (17032303)	116.07615 (17032303)
4201052.0	149.80289 (17100406)	129.49979 (17100406)	93.09479 (17100406)	97.24344 (17032303)	106.04735 (17032303)
4201002.0	179.95053 (17100406)	147.64135 (17100406)	110.92617 (17100406)	84.86508 (17032303)	94.85901 (17032303)
4200952.0	189.53901 (17100406)	162.65235 (17100406)	128.29059 (17100406)	94.77627 (17100406)	82.22553 (17032303)
4200902.0	193.54300 (17100406)	173.75601 (17100406)	144.62631 (17100406)	112.47262 (17100406)	78.55294 (17091905)
4200852.0	190.48920 (17100406)	180.37254 (17100406)	158.13069 (17100406)	128.85700 (17100406)	95.11493 (17100406)
4200802.0	186.58223 (17100406)	183.96187 (17100406)	167.73616 (17100406)	142.66714 (17100406)	111.33055 (17100406)
4200752.0	177.24022 (17100406)	182.07334 (17100406)	173.03996 (17100406)	153.56693 (17100406)	126.49960 (17100406)
4200702.0	164.98691 (17100406)	175.68360 (17100406)	173.92711 (17100406)	161.37716 (17100406)	139.27743 (17100406)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 556301.48	556351.48	556401.48	556451.48	556501.48
4203652.0	120.40271 (17030924)	114.86122 (17082202)	122.13457 (17082202)	131.09719 (17082202)	136.83521 (17082202)
4203602.0	124.74147 (17082202)	133.04376 (17082202)	139.04466 (17082202)	146.26259 (17082202)	150.51845 (17082202)
4203552.0	144.45196 (17082202)	150.61415 (17082202)	155.57425 (17082202)	160.79925 (17082202)	163.57717 (17111023)
4203502.0	164.34456 (17082202)	168.29679 (17082202)	170.82235 (17082202)	175.42835 (17111023)	178.22806 (17111023)
4203452.0	183.08962 (17082202)	184.43485 (17082202)	187.41783 (17111023)	190.89214 (17111023)	190.43102 (17111023)
4203402.0	201.62300 (17111023)	203.19562 (17111023)	204.11755 (17111023)	202.42950 (17111023)	198.41015 (17111023)
4203352.0	220.94128 (17111023)	218.02628 (17111023)	214.77291 (17111023)	209.10271 (17111023)	201.48465 (17111023)
4203302.0	234.67802 (17111023)	225.67112 (17111023)	219.65245 (17111023)	210.04264 (17111023)	198.87668 (17111023)
4203252.0	241.60055 (17111023)	228.11569 (17111023)	217.91974 (17111023)	204.76251 (17111023)	190.12880 (17111023)
4203202.0	241.83596 (17111023)	221.55063 (17111023)	209.24219 (17111023)	193.24556 (17111023)	175.58026 (17111023)
4203152.0	232.00024 (17111023)	208.79367 (17111023)	194.03322 (17111023)	176.23503 (17111023)	157.70864 (17111023)
4203102.0	214.15516 (17111023)	191.38725 (17111023)	171.87994 (17111023)	154.40504 (17111023)	136.76071 (17111023)
4203052.0	189.45309 (17111023)	167.18273 (17111023)	147.69725 (17111023)	131.01921 (17080622)	126.32752 (17080622)
4203002.0	160.63679 (17111023)	144.69476 (17080622)	138.65417 (17080622)	132.27857 (17080622)	125.73206 (17080622)
4202952.0	152.73992 (17080622)	144.58249 (17080622)	136.45164 (17080622)	128.38403 (17080622)	120.45092 (17080622)
4202902.0	148.22988 (17080622)	137.62314 (17080622)	128.61258 (17080622)	120.18475 (17082205)	113.02480 (17082205)
4202852.0	137.78208 (17082205)	128.05793 (17082205)	120.13840 (17082205)	112.13220 (17082205)	104.47660 (17082205)
4202802.0	127.03188 (17082205)	116.79954 (17082205)	108.60954 (17082205)	103.98829 (17080621)	100.13317 (17080621)
4202752.0	122.49483 (17080621)	142.53172 (17080621)	112.42553 (17080621)	107.73942 (17080621)	103.33669 (17080621)
4202702.0	125.45328 (17080621)	147.20359 (17080621)	113.83527 (17080621)	108.82083 (17080621)	103.89758 (17080621)
4202652.0	151.48076 (17080621)	144.40390 (17080621)	112.62557 (17080621)	107.12664 (17080621)	102.03999 (17080621)
4202602.0	142.04979 (17080621)	134.46987 (17080621)	108.55869 (17080621)	103.05611 (17080621)	97.96872 (17080621)
4202552.0	126.04900 (17080621)	118.64824 (17080621)	101.73610 (17080621)	96.50362 (17080621)	91.70213 (17080621)
4202502.0	137.46737 (17062423)	130.39299 (17062423)	106.52628 (17062423)	101.25397 (17062423)	96.45126 (17062423)
4202452.0	124.26739 (17062423)	143.36323 (17062423)	136.10036 (17062423)	129.54637 (17062423)	123.27362 (17062423)
4202402.0	127.43796 (17062423)	150.81095 (17062423)	114.75488 (17062423)	109.24300 (17062423)	104.16942 (17062423)
4202352.0	128.24932 (17051424)	121.45710 (17062423)	115.67541 (17062423)	110.66063 (17062423)	105.63504 (17062423)
4202302.0	136.66271 (17051424)	129.10133 (17051424)	121.26460 (17051424)	138.43211 (17062423)	133.25108 (17062423)
4202252.0	170.37698 (17051424)	133.92914 (17051424)	151.21688 (17051424)	142.38324 (17051424)	134.14697 (17051424)
4202202.0	175.03130 (17051424)	166.51479 (17051424)	159.14411 (17051424)	150.76912 (17051424)	143.76308 (17051424)
4202152.0	174.39265 (17120117)	165.14055 (17051424)	159.77888 (17051424)	153.55474 (17051424)	147.74305 (17051424)
4202102.0	190.26281 (17120117)	177.62989 (17120117)	165.28720 (17120117)	152.84432 (17120117)	145.30861 (17051424)
4202052.0	195.01494 (17120117)	185.85020 (17120117)	176.89330 (17120117)	166.59842 (17120117)	156.20416 (17120117)
4202002.0	187.50368 (17120117)	183.86902 (17120117)	178.09034 (17120117)	171.27709 (17120117)	164.14730 (17120117)
4201952.0	186.07521 (17041101)	170.52640 (17120117)	169.22634 (17120117)	166.43128 (17120117)	163.31566 (17120117)
4201902.0	240.25874 (17041101)	203.75547 (17041101)	170.11041 (17041101)	153.28644 (17120117)	153.34312 (17120117)
4201852.0	283.82438 (17041101)	251.89722 (17041101)	217.35722 (17041101)	185.55644 (17041101)	153.71133 (17041101)
4201802.0	306.19036 (17041101)	239.98569 (17041101)	255.75400 (17041101)	226.76929 (17041101)	197.34965 (17041101)
4201752.0	304.88156 (17041101)	242.82162 (17041101)	278.30578 (17041101)	256.76771 (17041101)	232.44247 (17041101)
4201702.0	238.94969 (17041101)	236.11782 (17041101)	229.92239 (17041101)	270.03458 (17041101)	254.26770 (17041101)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 556301.48	556351.48	556401.48	556451.48	556501.48
4201652.0	244.21375 (17041101)	258.76231 (17041101)	265.99577 (17041101)	266.83757 (17041101)	261.18207 (17041101)
4201602.0	197.13423 (17041101)	218.12209 (17041101)	233.62071 (17041101)	245.87277 (17041101)	250.46611 (17041101)
4201552.0	164.57611 (17103024)	169.44753 (17041101)	192.11410 (17041101)	211.56690 (17041101)	225.36076 (17041101)
4201502.0	158.76724 (17103024)	157.77084 (17103024)	151.63576 (17103024)	171.09243 (17041101)	190.47320 (17041101)
4201452.0	147.42579 (17103024)	151.02004 (17103024)	149.90646 (17103024)	145.28602 (17103024)	150.68972 (17041101)
4201402.0	132.10650 (17103024)	139.11944 (17103024)	142.56295 (17103024)	142.44787 (17103024)	139.88307 (17103024)
4201352.0	116.15309 (17111720)	123.62886 (17103024)	130.78190 (17103024)	134.92390 (17103024)	136.22239 (17103024)
4201302.0	120.92218 (17032303)	109.36203 (17111720)	115.99580 (17103024)	123.11689 (17103024)	127.86078 (17103024)
4201252.0	125.29061 (17032303)	115.21901 (17032303)	103.57226 (17111720)	108.55198 (17103024)	115.93402 (17103024)
4201202.0	126.45646 (17032303)	119.60297 (17032303)	109.92290 (17032303)	97.81507 (17032303)	101.77791 (17103024)
4201152.0	124.44186 (17032303)	120.79162 (17032303)	114.08824 (17032303)	104.91282 (17032303)	93.83507 (17032303)
4201102.0	119.34609 (17032303)	118.96377 (17032303)	115.34682 (17032303)	109.39898 (17032303)	100.38715 (17032303)
4201052.0	111.90235 (17032303)	114.50128 (17032303)	114.66274 (17032303)	111.07996 (17032303)	104.39116 (17032303)
4201002.0	102.78820 (17032303)	108.11377 (17032303)	110.72402 (17032303)	110.15031 (17032303)	106.42410 (17032303)
4200952.0	92.01284 (17032303)	99.58435 (17032303)	104.35515 (17032303)	106.53175 (17032303)	105.78290 (17032303)
4200902.0	80.84908 (17032303)	89.82545 (17032303)	96.18892 (17032303)	100.87667 (17032303)	102.39122 (17032303)
4200852.0	75.08957 (17091905)	79.57305 (17032303)	86.92766 (17032303)	92.86477 (17032303)	96.84190 (17032303)
4200802.0	82.37758 (17100406)	71.66840 (17091905)	77.12610 (17032303)	84.18478 (17032303)	89.68859 (17032303)
4200752.0	98.08696 (17100406)	71.56599 (17100406)	68.95053 (17091905)	74.24387 (17032303)	81.45472 (17032303)
4200702.0	112.93636 (17100406)	84.72370 (17100406)	68.56484 (17091905)	65.94143 (17091905)	72.71261 (17032303)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 556551.48	556601.48	556651.48	556701.48	556751.48
4203652.0	140.91398 (17082202)	143.44816 (17082202)	144.51690 (17111023)	145.76568 (17111023)	164.31431 (17082202)
4203602.0	152.76955 (17082202)	154.52636 (17111023)	157.14096 (17111023)	156.15173 (17111023)	177.40503 (17111023)
4203552.0	166.45507 (17111023)	166.83510 (17111023)	165.67831 (17111023)	165.06272 (17111023)	185.51408 (17111023)
4203502.0	178.92195 (17111023)	176.86444 (17111023)	173.00028 (17111023)	168.24055 (17111023)	162.45814 (17111023)
4203452.0	187.94962 (17111023)	182.97655 (17111023)	176.35693 (17111023)	168.52885 (17111023)	181.92764 (17111023)
4203402.0	192.67479 (17111023)	184.64609 (17111023)	175.37401 (17111023)	182.20869 (17111023)	169.79823 (17111023)
4203352.0	192.49317 (17111023)	181.69613 (17111023)	169.96970 (17111023)	166.03336 (17111023)	146.81719 (17111023)
4203302.0	186.37039 (17111023)	173.99283 (17111023)	160.21746 (17111023)	143.92951 (17111023)	135.07235 (17111023)
4203252.0	175.07190 (17111023)	161.06847 (17111023)	140.53689 (17111023)	121.95372 (17051504)	120.86611 (17111023)
4203202.0	160.11866 (17111023)	145.29708 (17111023)	125.83986 (17051504)	116.90538 (17111023)	104.99835 (17111023)
4203152.0	141.78822 (17111023)	126.97644 (17111023)	126.64238 (17080622)	105.40305 (17080622)	102.34644 (17080622)
4203102.0	121.23080 (17111023)	115.50045 (17080622)	130.76416 (17080622)	106.67287 (17080622)	102.40570 (17080622)
4203052.0	120.72104 (17080622)	134.44300 (17080622)	127.70666 (17080622)	104.72085 (17080622)	99.40154 (17080622)
4203002.0	118.48662 (17080622)	111.94725 (17080622)	120.44830 (17082205)	99.39672 (17080622)	93.80055 (17082205)
4202952.0	112.19962 (17080622)	119.81391 (17082205)	112.27716 (17082205)	94.09241 (17082205)	97.94319 (17082205)
4202902.0	106.15997 (17082205)	107.46216 (17082205)	92.93949 (17082205)	87.19939 (17082205)	91.04401 (17080621)
4202852.0	97.08103 (17082205)	105.98730 (17080621)	86.13699 (17080621)	83.42246 (17080621)	80.85031 (17080621)
4202802.0	96.27370 (17080621)	113.94496 (17080621)	89.42696 (17080621)	86.29006 (17080621)	83.34743 (17080621)
4202752.0	99.10000 (17080621)	94.93416 (17080621)	91.11274 (17080621)	87.62363 (17080621)	84.27013 (17080621)
4202702.0	99.12366 (17080621)	117.55856 (17080621)	90.87621 (17080621)	87.13519 (17080621)	83.62640 (17080621)
4202652.0	118.57991 (17080621)	92.92195 (17080621)	88.82079 (17080621)	84.98814 (17080621)	81.41889 (17080621)
4202602.0	108.82745 (17080621)	88.88637 (17080621)	84.89402 (17080621)	81.17211 (17080621)	77.69571 (17080621)
4202552.0	95.40505 (17080621)	83.24424 (17080621)	79.43147 (17080621)	75.87802 (17080621)	79.92787 (17062423)
4202502.0	92.06637 (17062423)	87.97124 (17062423)	84.17999 (17062423)	80.66500 (17062423)	90.03188 (17062423)
4202452.0	96.57930 (17062423)	92.25897 (17062423)	88.25835 (17062423)	84.54909 (17062423)	98.61349 (17062423)
4202402.0	124.47865 (17062423)	95.14591 (17062423)	91.10923 (17062423)	87.33213 (17062423)	105.44569 (17062423)
4202352.0	100.70876 (17062423)	122.61500 (17062423)	118.07146 (17062423)	88.61004 (17062423)	109.55441 (17062423)
4202302.0	102.40275 (17051424)	96.66703 (17051424)	92.31106 (17062423)	114.57353 (17062423)	110.59641 (17062423)
4202252.0	126.38161 (17051424)	102.57335 (17051424)	97.48547 (17051424)	112.24449 (17062423)	109.75986 (17062423)
4202202.0	136.47909 (17051424)	106.33160 (17051424)	101.73712 (17051424)	116.30135 (17051424)	110.28137 (17051424)
4202152.0	141.73162 (17051424)	135.58549 (17051424)	103.61399 (17051424)	123.87404 (17051424)	118.36157 (17051424)
4202102.0	140.82786 (17051424)	107.84251 (17051424)	103.80297 (17051424)	125.13729 (17051424)	120.39922 (17051424)
4202052.0	145.83845 (17120117)	114.68084 (17120117)	108.32995 (17120117)	101.69124 (17120117)	95.87804 (17120117)
4202002.0	156.28380 (17120117)	147.23734 (17120117)	112.91122 (17120117)	107.13302 (17120117)	121.51194 (17120117)
4201952.0	158.38366 (17120117)	152.35372 (17120117)	145.67042 (17120117)	138.77508 (17120117)	131.61801 (17120117)
4201902.0	152.04979 (17120117)	149.55596 (17120117)	145.99985 (17120117)	142.01988 (17120117)	136.71699 (17120117)
4201852.0	138.64932 (17120117)	139.40893 (17120117)	138.90813 (17120117)	137.55210 (17120117)	135.01288 (17120117)
4201802.0	169.76297 (17041101)	144.82202 (17041101)	126.00595 (17120117)	127.12048 (17120117)	127.13753 (17120117)
4201752.0	203.94089 (17041101)	180.40003 (17041101)	155.16628 (17041101)	122.15627 (17041101)	115.52337 (17022205)
4201702.0	233.47189 (17041101)	210.38759 (17041101)	182.90652 (17041101)	152.98659 (17041101)	129.13705 (17041101)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

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

Y-COORD (METERS)	X-COORD (METERS) 556551.48	556601.48	556651.48	556701.48	556751.48
4201652.0	249.46694 (17041101)	232.16976 (17041101)	210.85873 (17041101)	185.78404 (17041101)	163.17324 (17041101)
4201602.0	249.09061 (17041101)	241.45348 (17041101)	228.83107 (17041101)	210.47029 (17041101)	191.74363 (17041101)
4201552.0	232.35248 (17041101)	235.06103 (17041101)	232.40888 (17041101)	222.70996 (17041101)	210.29009 (17041101)
4201502.0	203.38843 (17041101)	214.63494 (17041101)	220.81287 (17041101)	219.97963 (17041101)	215.91027 (17041101)
4201452.0	167.11652 (17041101)	184.38677 (17041101)	197.60473 (17041101)	206.13955 (17041101)	208.10962 (17041101)
4201402.0	133.67520 (17103024)	149.56748 (17041101)	166.90722 (17041101)	181.08270 (17041101)	188.89128 (17041101)
4201352.0	134.06555 (17103024)	129.09479 (17103024)	133.62009 (17041101)	150.74685 (17041101)	163.43116 (17041101)
4201302.0	129.59035 (17103024)	128.38885 (17103024)	124.50738 (17103024)	119.21271 (17041101)	133.37516 (17041101)
4201252.0	121.02866 (17103024)	123.32255 (17103024)	122.89477 (17103024)	119.98662 (17103024)	115.17117 (17103024)
4201202.0	109.41786 (17103024)	114.65584 (17103024)	117.45213 (17103024)	117.96998 (17103024)	115.97391 (17103024)
4201152.0	95.93566 (17103024)	103.31513 (17103024)	108.71646 (17103024)	111.92180 (17103024)	112.98176 (17103024)
4201102.0	89.22416 (17032303)	89.87668 (17111720)	97.01014 (17103024)	102.91121 (17103024)	106.39534 (17103024)
4201052.0	95.66881 (17032303)	85.59840 (17032303)	85.42645 (17111720)	90.51594 (17103024)	96.83204 (17103024)
4201002.0	100.18725 (17032303)	91.84885 (17032303)	80.98480 (17032303)	79.81750 (17111720)	85.65347 (17103024)
4200952.0	101.65041 (17032303)	95.33728 (17032303)	87.33535 (17032303)	78.18632 (17032303)	75.24824 (17022705)
4200902.0	101.16857 (17032303)	97.63458 (17032303)	91.01290 (17032303)	82.65929 (17032303)	73.85466 (17032303)
4200852.0	98.45751 (17032303)	96.35500 (17032303)	92.87154 (17032303)	87.18783 (17032303)	79.68242 (17032303)
4200802.0	92.61814 (17032303)	94.17548 (17032303)	92.81230 (17032303)	88.39034 (17032303)	82.51312 (17032303)
4200752.0	86.27053 (17032303)	89.99476 (17032303)	89.64812 (17032303)	88.52224 (17032303)	85.13409 (17032303)
4200702.0	78.72574 (17032303)	84.20185 (17032303)	86.09667 (17032303)	86.99445 (17032303)	85.74488 (17032303)

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
554960.75	4202465.20	1693.13437	(17100606)	554889.41	4202471.69	1877.76348	(17100606)
555317.92	4202392.15	1413.25762	(17041101)				

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

*** THE SUMMARY OF MAXIMUM PERIOD (8760 HRS) RESULTS ***

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

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
PAREA1	1ST HIGHEST VALUE IS	141.89623 AT	(555051.48, 4202502.04, 2.00, 2.00, 0.00)	GC	UCART1
	2ND HIGHEST VALUE IS	138.57548 AT	(555051.48, 4202552.04, 2.00, 2.00, 0.00)	GC	UCART1
	3RD HIGHEST VALUE IS	109.74256 AT	(555051.48, 4202602.04, 2.00, 2.00, 0.00)	GC	UCART1
	4TH HIGHEST VALUE IS	105.18013 AT	(555051.48, 4202452.04, 2.00, 2.00, 0.00)	GC	UCART1
	5TH HIGHEST VALUE IS	101.01392 AT	(555051.48, 4202402.04, 3.00, 3.00, 0.00)	GC	UCART1
	6TH HIGHEST VALUE IS	87.78414 AT	(555001.48, 4202452.04, 2.00, 2.00, 0.00)	GC	UCART1
	7TH HIGHEST VALUE IS	87.04027 AT	(555001.48, 4202502.04, 2.00, 2.00, 0.00)	GC	UCART1
	8TH HIGHEST VALUE IS	85.72062 AT	(555101.48, 4202502.04, 2.00, 2.00, 0.00)	GC	UCART1
	9TH HIGHEST VALUE IS	83.52716 AT	(555001.48, 4202552.04, 2.00, 2.00, 0.00)	GC	UCART1
	10TH HIGHEST VALUE IS	81.81751 AT	(555101.48, 4202552.04, 2.00, 2.00, 0.00)	GC	UCART1
ALL	1ST HIGHEST VALUE IS	141.89623 AT	(555051.48, 4202502.04, 2.00, 2.00, 0.00)	GC	UCART1
	2ND HIGHEST VALUE IS	138.57548 AT	(555051.48, 4202552.04, 2.00, 2.00, 0.00)	GC	UCART1
	3RD HIGHEST VALUE IS	109.74256 AT	(555051.48, 4202602.04, 2.00, 2.00, 0.00)	GC	UCART1
	4TH HIGHEST VALUE IS	105.18013 AT	(555051.48, 4202452.04, 2.00, 2.00, 0.00)	GC	UCART1
	5TH HIGHEST VALUE IS	101.01392 AT	(555051.48, 4202402.04, 3.00, 3.00, 0.00)	GC	UCART1
	6TH HIGHEST VALUE IS	87.78414 AT	(555001.48, 4202452.04, 2.00, 2.00, 0.00)	GC	UCART1
	7TH HIGHEST VALUE IS	87.04027 AT	(555001.48, 4202502.04, 2.00, 2.00, 0.00)	GC	UCART1
	8TH HIGHEST VALUE IS	85.72062 AT	(555101.48, 4202502.04, 2.00, 2.00, 0.00)	GC	UCART1
	9TH HIGHEST VALUE IS	83.52716 AT	(555001.48, 4202552.04, 2.00, 2.00, 0.00)	GC	UCART1
	10TH HIGHEST VALUE IS	81.81751 AT	(555101.48, 4202552.04, 2.00, 2.00, 0.00)	GC	UCART1

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

*** MODELOPTs: RegDFAULT CONC ELEV RURAL SigA Data

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

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

GROUP ID			AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
PAREA1	HIGH	1ST HIGH VALUE IS	2681.00121	ON 17101622:	AT (555051.48, 4202402.04, 3.00, 3.00, 0.00)	GC	UCART1
ALL	HIGH	1ST HIGH VALUE IS	2681.00121	ON 17101622:	AT (555051.48, 4202402.04, 3.00, 3.00, 0.00)	GC	UCART1

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

```
*** MODELOPTs:    RegDFAULT  CONC  ELEV  RURAL  SigA Data

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

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

A Total of            0 Fatal Error Message(s)
A Total of            4 Warning Message(s)
A Total of          325 Informational Message(s)

A Total of         8760 Hours Were Processed

A Total of            0 Calm Hours Identified

A Total of          141 Missing Hours Identified (  1.61 Percent)


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


   ********   WARNING MESSAGES   ********
MX W403      69       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data
MX W403       1       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data
MX W450    8761       CHKDAT: Record Out of Sequence in Meteorological File at:      15010101
MX W450    8761       CHKDAT: Record Out of Sequence in Meteorological File at:    1 year gap

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

APPENDIX E

Excerpts of HARP Model

Construction Phase
Emissions Inventory and Risk Model Selection

Emission Inventory

Add Import Export Delete All Options Filter: All All

SrcID	StkID	ProID	PolID	PolAbbrev	Multiplier	Annual Ems (lbs/yr)	Max Hr Ems (lbs/hr)	MWAF
PAREA1	0	0	9901	DieselExhPM	1	162.5	0.143	1
SLINE1	0	0	106990	1,3-Butadiene	1	0.106	5.09E-05	1
SLINE1	0	0	75070	Acetaldehyde	1	0.087	4.2E-05	1
SLINE1	0	0	71432	Benzene	1	1.427	0.000686	1
SLINE1	0	0	50000	Formaldehyde	1	0.406	0.000195	1
SLINE2	0	0	106990	1,3-Butadiene	1	0.0474	2.28E-05	1
SLINE2	0	0	75070	Acetaldehyde	1	0.0391	1.88E-05	1
SLINE2	0	0	71432	Benzene	1	0.6391	0.000307	1
SLINE2	0	0	50000	Formaldehyde	1	0.1817	8.73E-05	1
SLINE3	0	0	106990	1,3-Butadiene	1	0.00474	2.28E-06	1
SLINE3	0	0	75070	Acetaldehyde	1	0.00391	1.88E-06	1
SLINE3	0	0	71432	Benzene	1	0.06391	3.07E-05	1
SLINE3	0	0	50000	Formaldehyde	1	0.01817	8.73E-06	1

HARP2 - Air Dispersion & Risk Tool (dated 19121)

File Tools Help

- Calculate Risk
  - Select Risk Scenario
  - Select Pathways to Evaluate an
  - Press Calculate
- View Risk Results
- Refined Acute Analysis
- Spatial Averaging Risk (Optional)
- Project Summary Report

Air Dispersion | Import/Calc GLCs | Risk Analysis

Select Risk Scenario

Analysis Type
- (●) Cancer Risk
- ( ) Chronic Risk (Non-cancer)
- ( ) 8-Hour Chronic Risk (Non-cancer)
- ( ) Acute Risk (Non-cancer)
- ( ) Cancer, Chronic, and Acute

Help me choose

Receptor Type
- (●) Individual Resident
- ( ) Population-Wide
- ( ) Worker

Help me choose

Exposure Duration
- ( ) 70 Year
- ( ) 30 Year
- ( ) 25 Year (Worker)
- ( ) 9 Year
- (●) User Defined (Tier 2) 1

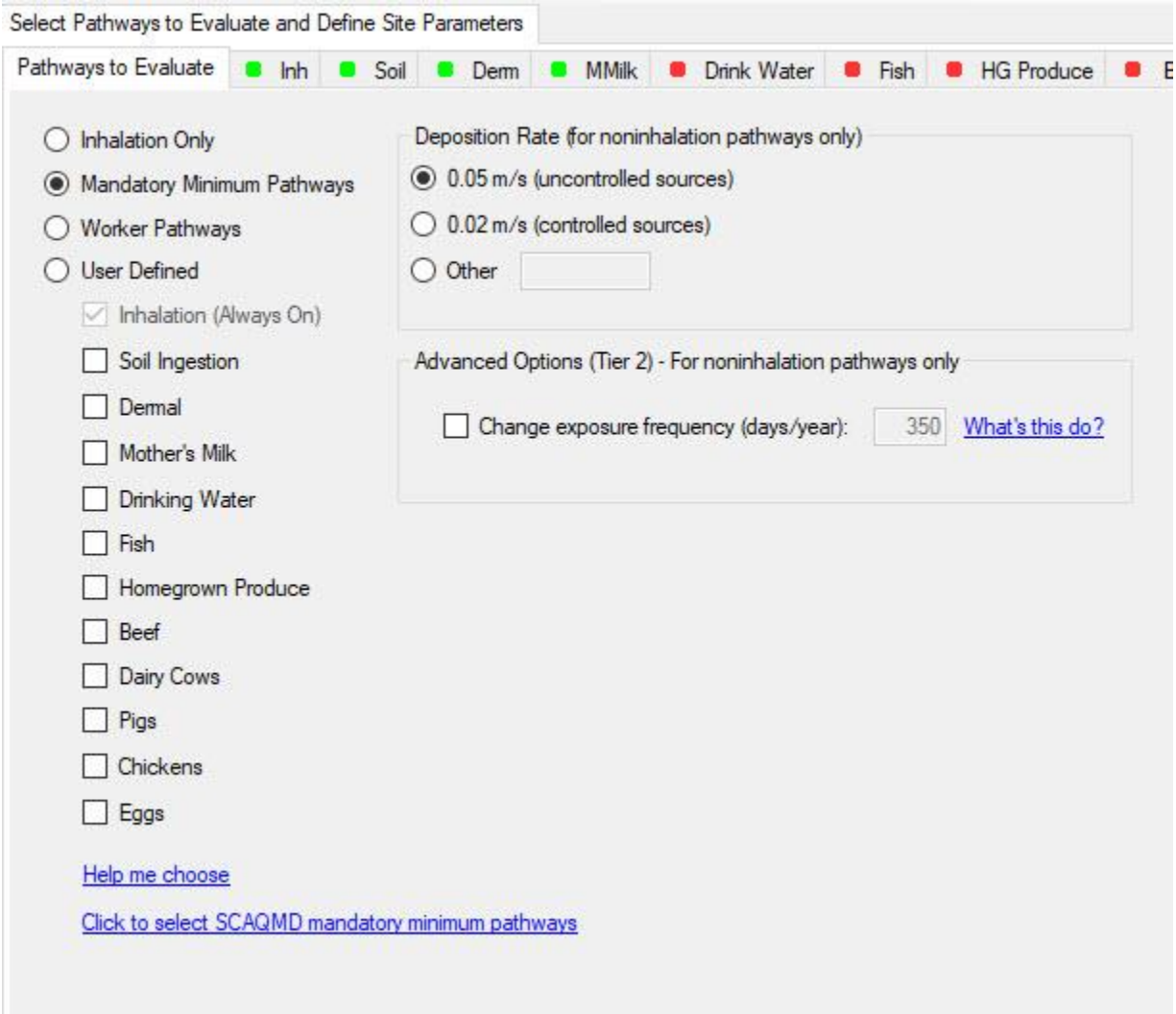
Start Age (years) 3rd Trimester

Help me choose

Intake Rate Percentile
- (●) OEHHA Derived Method
- ( ) 95th (High End)
- ( ) 65th (Mean)
- ( ) Risk Management Policy (RMP) - "Inhalation Only"
- ( ) RMP using the Derived Method

Help me choose

Construction Phase
Exposure Pathway Selection



Construction Phase
Risk Results

View Risk Results

Cancer | Chronic | 8-hour | Acute

Load File | Risk Views | Options | Export

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO
1	ALL	UCART1	553801.48	4200702.04	2.7575e-07	1YrCancerDerived_InhSoilDerm
2	ALL	UCART1	553851.48	4200702.04	2.8506e-07	1YrCancerDerived_InhSoilDerm
3	ALL	UCART1	553901.48	4200702.04	2.9490e-07	1YrCancerDerived_InhSoilDerm
4	ALL	UCART1	553951.48	4200702.04	3.0556e-07	1YrCancerDerived_InhSoilDerm
5	ALL	UCART1	554001.48	4200702.04	3.1657e-07	1YrCancerDerived_InhSoilDerm
6	ALL	UCART1	554051.48	4200702.04	3.2779e-07	1YrCancerDerived_InhSoilDerm
7	ALL	UCART1	554101.48	4200702.04	3.3932e-07	1YrCancerDerived_InhSoilDerm
8	ALL	UCART1	554151.48	4200702.04	3.5078e-07	1YrCancerDerived_InhSoilDerm
9	ALL	UCART1	554201.48	4200702.04	3.6131e-07	1YrCancerDerived_InhSoilDerm
10	ALL	UCART1	554251.48	4200702.04	3.7306e-07	1YrCancerDerived_InhSoilDerm
11	ALL	UCART1	554301.48	4200702.04	3.8371e-07	1YrCancerDerived_InhSoilDerm
12	ALL	UCART1	554351.48	4200702.04	3.9427e-07	1YrCancerDerived_InhSoilDerm
13	ALL	UCART1	554401.48	4200702.04	4.0435e-07	1YrCancerDerived_InhSoilDerm
14	ALL	UCART1	554451.48	4200702.04	4.1430e-07	1YrCancerDerived_InhSoilDerm
15	ALL	UCART1	554501.48	4200702.04	4.2394e-07	1YrCancerDerived_InhSoilDerm
16	ALL	UCART1	554551.48	4200702.04	4.3244e-07	1YrCancerDerived_InhSoilDerm
17	ALL	UCART1	554601.48	4200702.04	4.3912e-07	1YrCancerDerived_InhSoilDerm
18	ALL	UCART1	554651.48	4200702.04	4.4100e-07	1YrCancerDerived_InhSoilDerm
19	ALL	UCART1	554701.48	4200702.04	4.4068e-07	1YrCancerDerived_InhSoilDerm

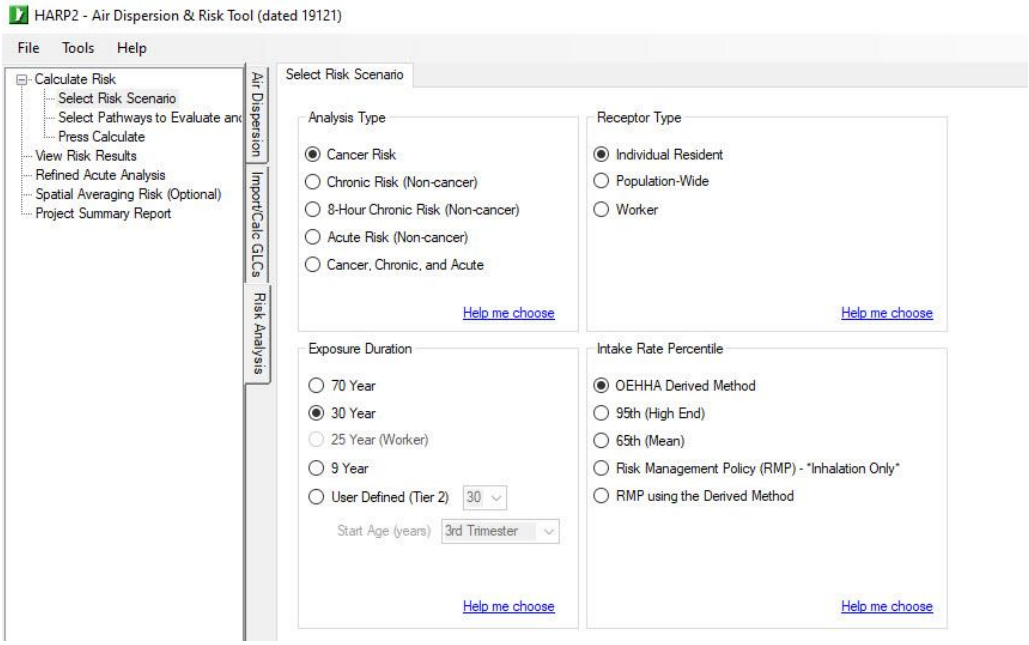
Operational Phase
Emissions Inventory

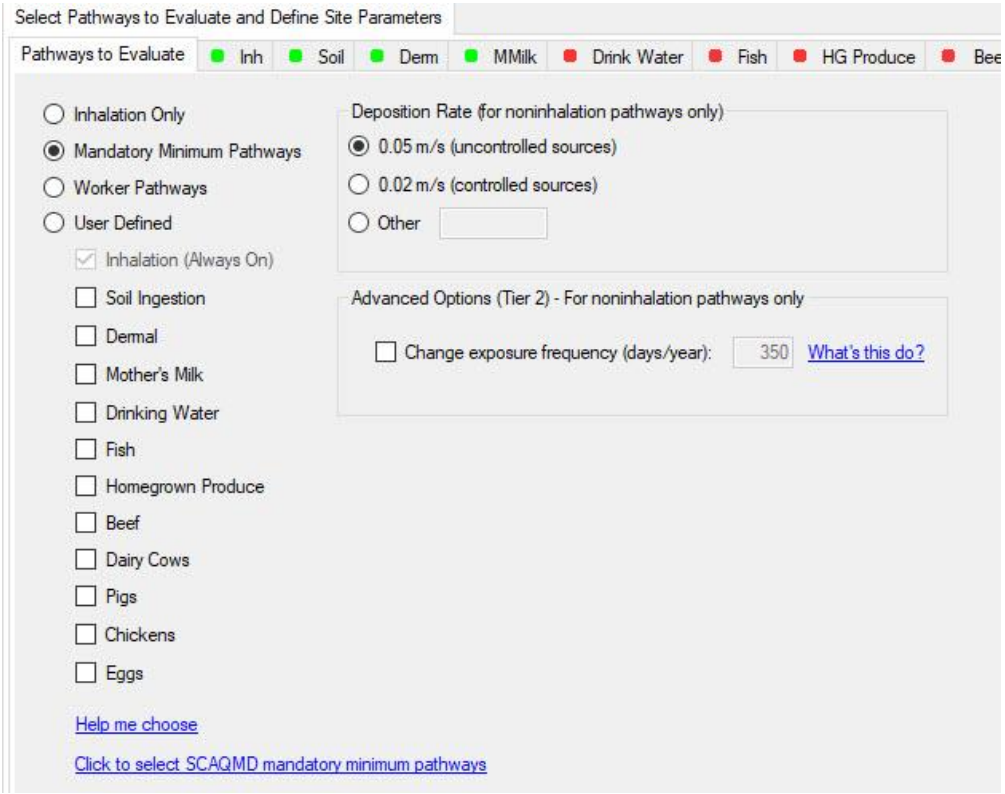
Emission Inventory

Add Import Export Delete All Options Filter: All All

SrcID	StkID	ProID	PolID	PolAbbrev	Multiplier	Annual Ems (lbs/yr)	Max Hr Ems (lbs/hr)	MWAF
PAREA1	0	0	9901	DieselExhPM	1	162.5	0.143	1
SLINE1	0	0	106990	1,3-Butadiene	1	0.106	5.09E-05	1
SLINE1	0	0	75070	Acetaldehyde	1	0.087	4.2E-05	1
SLINE1	0	0	71432	Benzene	1	1.427	0.000686	1
SLINE1	0	0	50000	Formaldehyde	1	0.406	0.000195	1
SLINE2	0	0	106990	1,3-Butadiene	1	0.0474	2.28E-05	1
SLINE2	0	0	75070	Acetaldehyde	1	0.0391	1.88E-05	1
SLINE2	0	0	71432	Benzene	1	0.6391	0.000307	1
SLINE2	0	0	50000	Formaldehyde	1	0.1817	8.73E-05	1
SLINE3	0	0	106990	1,3-Butadiene	1	0.00474	2.28E-06	1
SLINE3	0	0	75070	Acetaldehyde	1	0.00391	1.88E-06	1
SLINE3	0	0	71432	Benzene	1	0.06391	3.07E-05	1
SLINE3	0	0	50000	Formaldehyde	1	0.01817	8.73E-06	1

Operational Phase
Risk Model and Exposure Pathway Selection





Construction Phase
Risk Results

View Risk Results

Cancer | Chronic | 8-hour | Acute

Load File | Risk Views | Options | Export

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO
1	ALL	UCART1	553801.48	4200702.04	2.7575e-07	1YrCancerDerived_InhSoilDerm
2	ALL	UCART1	553851.48	4200702.04	2.8506e-07	1YrCancerDerived_InhSoilDerm
3	ALL	UCART1	553901.48	4200702.04	2.9490e-07	1YrCancerDerived_InhSoilDerm
4	ALL	UCART1	553951.48	4200702.04	3.0556e-07	1YrCancerDerived_InhSoilDerm
5	ALL	UCART1	554001.48	4200702.04	3.1657e-07	1YrCancerDerived_InhSoilDerm
6	ALL	UCART1	554051.48	4200702.04	3.2779e-07	1YrCancerDerived_InhSoilDerm
7	ALL	UCART1	554101.48	4200702.04	3.3932e-07	1YrCancerDerived_InhSoilDerm
8	ALL	UCART1	554151.48	4200702.04	3.5078e-07	1YrCancerDerived_InhSoilDerm
9	ALL	UCART1	554201.48	4200702.04	3.6131e-07	1YrCancerDerived_InhSoilDerm
10	ALL	UCART1	554251.48	4200702.04	3.7306e-07	1YrCancerDerived_InhSoilDerm
11	ALL	UCART1	554301.48	4200702.04	3.8371e-07	1YrCancerDerived_InhSoilDerm
12	ALL	UCART1	554351.48	4200702.04	3.9427e-07	1YrCancerDerived_InhSoilDerm
13	ALL	UCART1	554401.48	4200702.04	4.0435e-07	1YrCancerDerived_InhSoilDerm
14	ALL	UCART1	554451.48	4200702.04	4.1430e-07	1YrCancerDerived_InhSoilDerm
15	ALL	UCART1	554501.48	4200702.04	4.2394e-07	1YrCancerDerived_InhSoilDerm
16	ALL	UCART1	554551.48	4200702.04	4.3244e-07	1YrCancerDerived_InhSoilDerm
17	ALL	UCART1	554601.48	4200702.04	4.3912e-07	1YrCancerDerived_InhSoilDerm
18	ALL	UCART1	554651.48	4200702.04	4.4100e-07	1YrCancerDerived_InhSoilDerm
19	ALL	UCART1	554701.48	4200702.04	4.4068e-07	1YrCancerDerived_InhSoilDerm
20	ALL	UCART1	554751.48	4200702.04	4.3624e-07	1YrCancerDerived_InhSoilDerm
21	ALL	UCART1	554801.48	4200702.04	4.2791e-07	1YrCancerDerived_InhSoilDerm
22	ALL	UCART1	554851.48	4200702.04	4.1677e-07	1YrCancerDerived_InhSoilDerm
23	ALL	UCART1	554901.48	4200702.04	4.0377e-07	1YrCancerDerived_InhSoilDerm
24	ALL	UCART1	554951.48	4200702.04	3.9018e-07	1YrCancerDerived_InhSoilDerm
25	ALL	UCART1	555001.48	4200702.04	3.7670e-07	1YrCancerDerived_InhSoilDerm

APPENDIX F

Calculation of Vehicular Emissions Along Richmond Parkway and Parr Boulevard

Table F-1
Calculation Off-Site Emissions from
Truck Travel within 1,000 feet (0.19 Miles) of Project

Emissions from Trucks		Segment 1 South on Richmond Pkwy	Segment 2 North on Richmond Pkwy	Segment 3 East on Parr Bld
HD Truck Vehicle Count				
Daily	*(truck trips/day)*	1,860	1,860	330
Annual	*(truck trips/yr)*	678,900	678,900	120,450
Distance Travelled				
1 Truck Trip	*(mile/truck trip)*	0.19	0.19	0.19
All Truck Trips Annually	*(total miles/yr)*	128,991	128,991	22,886
Emission Factors (PM-2.5)				
Vehicle Exhaust (Note 1)	*(grams/mile)*	0.019	0.019	0.019
Emissions				
1 Truck	*grams*	0.0036	0.0036	0.0036
All Truck Trips Annually	*grams*	2,451.9	2,451.9	435.0
All Truck Trips Annually	*lbs*	5.401	5.401	0.958

Notes:
1. Emissions based on EMFAC 2017 for CY 2022 aggregate speed and model years
2. Daily vehicle count: 120 HD trucks/day
Ref: E-Mail from KD Anderson Oct 5, 2020

Table F-2
Calculation of Off-Site Emissions from Light Duty Vehicles Along Richmond Parkway

No. of Vehicles per Day	29,140	veh/day total
From Fehr & Peers	10,636,100	veh/yr total
	5,318,050	veh/yr per 0.19 mile segment
Length of Roadway (1,000 ft)	0.19	mile
Annual Miles per Roadway Segment	1,010,430	miles/yr per 0.19 mile segment

	EF	Emission Rate (Vehicle Travel)			
TAC	(mg/mile)	(mg/yr)	(g/yr)	(lb/yr)	
1,3 Butadiene	4.48	4,526,724	4526.724	9.971	
Benzene	45.28	45,752,248	45752.248	100.776	
Formaldehyde	12.87	13,004,228	13004.228	28.644	
Acetaldehyde	2.77	2,798,890	2798.890	6.165	

NOTES

1. Emission Factors From: Zhu, Durbin, Norbeck and Cocker (July 2004)
"Internal Combustion Engine (ICE) Air Toxic Emissions"
Final Report to Research Division CARB, Sacramento, CA

2. Emissions from Vehicle Idle + start-up and shut-down estimated to equal 50% of emissions from vehicle travel

Table F-3
Calculation of Off-Site Emissions from Light Duty Vehicles
Along Parr Blvd East of Richmond Parkway

No. of Vehicles per Day	2,970	veh/day total
From Fehr & Peers	1,084,050	veh/yr total
	542,025	veh/yr per 0.19 mile segment
Length of Roadway (1,000 ft)	0.19	mile
Annual Miles per Roadway Segment	102,985	miles/yr per 0.19 mile segment

	EF	Emission Rate (Vehicle Travel)			
TAC	(mg/mile)	(mg/yr)	(g/yr)	(lb/yr)	
1,3 Butadiene	4.48	461,372	461.372	1.016	
Benzene	45.28	4,663,149	4663.149	10.271	
Formaldehyde	12.87	1,325,414	1325.414	2.919	
Acetaldehyde	2.77	285,268	285.268	0.628	

NOTES

1. Emission Factors From: Zhu, Durbin, Norbeck and Cocker (July 2004)
"Internal Combustion Engine (ICE) Air Toxic Emissions"
Final Report to Research Division CARB, Sacramento, CA

2. Emissions from Vehicle Idle + start-up and shut-down estimated to equal 50% of emissions from vehicle travel

THIS PAGE INTENTIONALLY LEFT BLANK

B.3 - Energy Calculations

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix B: Energy Supporting Information

Table of Contents

Project Energy Use Summary..... 1

Construction Vehicle Fuel Calculations..... 2

Construction Equipment Fuel Calculations.....3

Construction Office Electricity Calculations..... 4

Proposed Operations Fuel Consumption (Year 2021).....5

Proposed Operations Fuel Consumption (Year 2023)..... 7

Proposed Operations Fuel Consumption (Year 2025)..... 9

Proposed Operations Fuel Consumption (Year 2027)..... 11

Proposed Operations Natural Gas Use.....12

Proposed Operations Electricity Use.....13

Scannell Properties Project Energy Use Summary

Summary of Energy Use During Construction		(Annually)
Construction vehicle fuel	45,280	gallons (gasoline, diesel)
Construction equipment fuel	76,294	gallons (diesel)
Total construction fuel	121,574	gallons (gasoline, diesel)
Construction office electricity	8,293	kilowatt hours

Summary of Energy Use During Operations		(Annually)
Operation vechicle fuel (2021)	362,339,660.00	gallons (gasoline, diesel)
Operation vechicle fuel (2023)	336,751,453.00	gallons (gasoline, diesel)
Operation vechicle fuel (2025)	317,506,944.00	gallons (gasoline, diesel)
Operation vechicle fuel (2027)	301,514,315	gallons (gasoline, diesel)
Operation natural gas	342,889	kilo-British Thermal Units
Operation electricity	0	kilowatt hours

Construction Vehicle Fuel Calculations

California Air Resource Board (ARB). 2021. EMFAC2021 Web Database. Website: https://www.arb.ca.gov/emfac/emissions-inventory. Accessed March 10, 2021.

VMT = Vehicle Miles Traveled
FE = Fuel Economy

Source: EMFAC2021 (v1.0.0) Emissions Inventory
Region Type: County
Region: Contra Costa
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

-

North Richmond Warehouse - Construction with Mitigation Measures - Contra Costa County, Annual

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	12	15.00	0.00	60.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	14	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	16	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	18	308.00	120.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	12	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	2	62.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Region	CalYr	VehClass	MdlYr	Speed	Fuel	Population	VMT	Trips	Fuel_Consumption (1000 gallons/day)	Calculations FE (mi/gallon)	VMT*FE
Contra Costa	2021	HHDT	Aggregated	Aggregated	GAS	35.49410612	4801.890157	710.1660752	1.009962	4.754526	22830.712
Contra Costa	2021	HHDT	Aggregated	Aggregated	DSL	4335.879651	595909.4323	0	101.6563	5.862	3493221.321
Contra Costa	2021	LDA	Aggregated	Aggregated	GAS	380337.661	14006557.71	2395687.045	465.5673	30.08493	421386276.4
Contra Costa	2021	LDA	Aggregated	Aggregated	DSL	4254.054347	160879.0454	26344.7861	4.201198	38.29361	6160639.805
Contra Costa	2021	LDA	Aggregated	Aggregated	ELEC	10549.41668	533221.0013	68703.33789	0	0	0
Contra Costa	2021	LDT1	Aggregated	Aggregated	GAS	28059.67855	986241.0891	170715.241	38.94179	25.32603	24977572.48
Contra Costa	2021	LDT1	Aggregated	Aggregated	DSL	28.09689616	670.3359452	139.3496556	0.022756	29.45732	19746.30347
Contra Costa	2021	LDT1	Aggregated	Aggregated	ELEC	11.60066686	420.5408225	71.38184233	0	0	0
Contra Costa	2021	LDT2	Aggregated	Aggregated	GAS	118240.0747	4687318.748	745579.0618	207.927	22.5431	105666688.9
Contra Costa	2021	LDT2	Aggregated	Aggregated	DSL	202.7826401	8986.088558	1301.373129	0.300265	29.92716	268928.1034
Contra Costa	2021	LHDT1	Aggregated	Aggregated	GAS	7047.187186	209041.8735	104992.5888	21.64786	9.656468	2018606.124
Contra Costa	2021	LHDT1	Aggregated	Aggregated	DSL	6553.455705	224792.1488	82434.22852	12.83678	17.51157	3936462.957
Contra Costa	2021	LHDT2	Aggregated	Aggregated	GAS	1029.631179	38838.39532	15339.97042	4.379034	8.869169	344464.2862
Contra Costa	2021	LHDT2	Aggregated	Aggregated	DSL	2257.238747	89485.07633	28393.22384	5.633193	15.88532	1421499.038
Contra Costa	2021	MCY	Aggregated	Aggregated	GAS	18026.0343	137693.9314	36048.46339	3.743268	36.78442	5064991.17
Contra Costa	2021	MDV	Aggregated	Aggregated	GAS	86570.34572	3056760.812	534537.7523	184.6288	16.55625	50608490.19
Contra Costa	2021	MDV	Aggregated	Aggregated	DSL	1317.251187	58790.97628	8415.128067	2.578658	22.79906	1340379.103
Contra Costa	2021	MH	Aggregated	Aggregated	GAS	2020.545623	17031.97115	202.1353842	2.570457	6.626047	112854.6366
Contra Costa	2021	MH	Aggregated	Aggregated	DSL	565.7507902	4957.165162	56.57507902	0.514749	9.630264	47738.80951
Contra Costa	2021	MHDT	Aggregated	Aggregated	GAS	712.6758445	38848.25506	14259.2183	5.988409	6.487241	252018.0057
Contra Costa	2021	MHDT	Aggregated	Aggregated	DSL	4714.43802	229129.245	0	27.6091	8.299048	1901554.587

Worker
Sum of VMT*FE (Column BI) 610428721.2
Total VMT 23499846.35
Weighted Average FE 25.9758601

Vendor
Sum of VMT*FE (Column BI) 9874604.998
Total VMT 830134.9941
Weighted Average FE 11.89517978

Haul
Sum of VMT*FE (Column BI) 3516052.033
Total VMT 600711.3225
Weighted Average FE 5.853147596

Scannell Properties Project Construction Assumptions

On-site Construction

Source: AQ/GHG Appendix, CalEEMod Output
CalEEMod output file: North Richmond Warehouse - Construction with Mitigation Measures -Contra Costa County, Annual
Time stamp: Date: March 10, 2021

Construction Schedule	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days
	Demolition	Demolition	1/1/2021	1/21/2021	5	15
	Site Preparation	Site Preparation	1/22/2021	2/4/2021	5	10
	Grading	Grading	2/5/2021	3/8/2021	5	22
	Building Construction	Building Construction	3/9/2021	1/10/2022	5	220
	Paving	Paving	1/11/2022	2/2/2022	5	17
	Architectural Coating	Architectural Coating	2/3/2022	2/25/2022	5	17

Trips and VMT	Phase Name	Trips per Day: Worker Trip Number	Total Trips: Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Vendor Vehicle Class	Hauling Vehicle Class	Num Days	Trips: Worker Trip Number	Vendor Trip Number	Hauling Trip Number	VMT: Worker Trips	Vendor Trips	Hauling Trips	Fuel Consumption (gallons): Worker Trips	Vendor Trips	Hauling Trips
	Demolition	15	0	60	10.8	7.3	20	HDT_Mix	HHDT	15	225	0	60	2,430	0	1,200	93.55	0.00	10.25
	Site Preparation	18	0	0	10.8	7.3	20	HDT_Mix	HHDT	10	180	0	0	1,944	0	0	74.84	0.00	0.00
	Grading	20	0	0	10.8	7.3	20	HDT_Mix	HHDT	22	440	0	0	4,752	0	0	182.94	0.00	0.00
	Building Construction	308	120	0	10.8	7.3	20	HDT_Mix	HHDT	220	67,760	26,400	0	731,808	192,720	0	28,172.62	16,201.52	0.00
	Paving	15	0	0	10.8	7.3	20	HDT_Mix	HHDT	17	255	0	0	2,754	0	0	106.02	0.00	0.00
	Architectural Coating	62	0	0	10.8	7.3	20	HDT_Mix	HHDT	17	1,054	0	0	11,383	0	0	438.22	0.00	0.00

Total Construction VMT (miles)
948,991

On-Site Total Fuel Consumption (gallons)
45,280

Construction Equipment Fuel Calculation

On-site

Source: AQ/GHG Appendix, CalEEMod Output

CalEEMod output file: North Richmond Warehouse - Construction with Mitigation Measures -Contra Costa County, Annual

Time stamp: Date: March 10, 2021

Construction Schedule	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days
	Demolition	Demolition	1/1/2021	1/21/2021	5	15
	Site Preparation	Site Preparation	1/22/2021	2/4/2021	5	10
	Grading	Grading	2/5/2021	3/8/2021	5	22
	Building Construction	Building Construction	3/9/2021	1/10/2022	5	220
	Paving	Paving	1/11/2022	2/2/2022	5	17
	Architectural Coating	Architectural Coating	2/3/2022	2/25/2022	5	17

Construction Equipment	Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Number of Days	HP Hours	Diesel Fuel Usage
	Demolition	Concrete/Industrial Saws	2	8	81	0.73	15	14,191.20	709.56
	Demolition	Excavators	6	8	158	0.38	15	43,228.80	2,161.44
	Demolition	Rubber Tired Dozers	4	8	247	0.4	15	47,424.00	2,371.20
	Site Preparation	Rubber Tired Dozers	6	8	247	0.4	10	47,424.00	2,371.20
	Site Preparation	Tractors/Loaders/Backhoes	8	8	97	0.37	10	22,969.60	1,148.48
	Grading	Excavators	4	8	158	0.38	22	42,268.16	2,113.41
	Grading	Graders	2	8	187	0.41	22	26,987.84	1,349.39
	Grading	Rubber Tired Dozers	2	8	247	0.4	22	34,777.60	1,738.88
	Grading	Scrapers	4	8	367	0.48	22	124,016.64	6,200.83
	Grading	Tractors/Loaders/Backhoes	4	8	97	0.37	22	25,266.56	1,263.33
	Building Construction	Cranes	2	7	231	0.29	220	206,329.20	10,316.46
	Building Construction	Forklifts	6	8	89	0.2	220	187,968.00	9,398.40
	Building Construction	Generator Sets	2	8	84	0.74	220	218,803.20	10,940.16
	Building Construction	Tractors/Loaders/Backhoes	6	7	97	0.37	220	331,623.60	16,581.18
	Building Construction	Welders	2	8	46	0.45	220	72,864.00	3,643.20
	Paving	Pavers	4	8	130	0.42	17	29,702.40	1,485.12
	Paving	Paving Equipment	4	8	132	0.36	17	25,850.88	1,292.54
	Paving	Rollers	4	8	80	0.38	17	16,537.60	826.88
	Architectural Coating	Air Compressors	2	6	78	0.48	17	7,637.76	381.89
							Construction Equipment Fuel Consumption		**76,293.55** **gallons**

Construction Office Electricity Calculation

Energy Appendix: CalEEMod Typical Construction Trailer
Typical Construction Trailer - Contra Costa County, Annual
Date: March 10, 2021

5.3 Energy by Land Use - Electricity

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	7207.2	0.6865	9.0000e-005	2.0000e-005	0.6947
Total		**0.6865**	**9.0000e-005**	**2.0000e-005**	**0.6947**

kWh/yr = kilowatt hours per year

Energy by Land Use - Electricity

Annual	7,207	kWh/yr
Total Over Construction	**8,293**	**kWh**

Total Construction Schedule	
Start	1/1/2021
End	2/25/2022
Total Calendar Days	420
Years	1.15

Year 2021 Project Operational Fuel Calculation

California Air Resource Board (ARB). 2020.
EMFAC2017 Web Database. Website:

EMFAC2017 (v1.0.2) E VMT = Vehicle Miles Traveled
Region Type: County FE = Fuel Economy
Region: CONTRA COSTA
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption. Note 'day' in the unit is operation day.

Year	Type of Vehicle		
	On-Site Service Vehicles	Delivery Trucks and Vans	Heavy-Duty Trucks
2021	100% Zero Emission	33% Zero Emission, 67% Diesel	100% Diesel, Model 2014 or Later
2023	100% Zero Emission	65% Zero Emission, 35% Diesel	100% Diesel, Model 2014 or Later
2025	100% Zero Emission	80% Zero Emission, 20% Diesel	100% Zero Emission
2027	100% Zero Emission	100% Zero Emission	100% Zero Emission
Notes: Drayage vehicles would not be used in the North Richmond Warehouse Project (Anderson pers. comm.).			

Note: Table from Table 1 of AQ and GHG Report provided in EIR appendix B.

Given

Calculations

VehClass	MdlYr	Speed	Fuel	VMT	Fuel Consumption	Fuel Econom	VMT*FE	Fleet Mix (CalEEMod)	Vehicle Type VMT (CalEEMod)	Non-Electric Fleet Proportion	Fuel Consumption (Gallons)
Light Duty Passenger Vehicles											
LDA	Aggregated	Aggregated	GAS	14954127	481.1572	31.0795	4.65E+08	0.6979	13,822,079	1	301,514,315.16
LDA	Aggregated	Aggregated	DSL	159664.2	3.337399	47.84091	7638482				-
						Sum of VMT*FE	**4.72E+08**				
						Total VMT	**15113792**				
						Weighted Average FE (miles/gallon)	**31.2566**				
Delivery Vehicles											
MDV	Aggregated	Aggregated	DSL	83935.84	3.174521	26.44047	2219303	0.2188	13,822,079	0.67	53,575,308.52
Heavy-Duty Trucks											
HHDT	Aggregated	Aggregated	DSL	598251.3	95.00836	6.296828	3767085	0.0833	13,822,079	1	7,250,036.70
										Total Fuel Consumption	**362,339,660.38**
											362,339,660.00

PASSENGER VEHICLE VMT (LDA), Delivery Vehicles VMT (MDV), and Heavy Duty Trucks VMT (HHD)

2021 - Contra Costa County, Annual

Annual VMT (miles): 13,822,079

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871
Unrefrigerated Warehouse-No Rail	0.697900	0.000000	0.000000	0.218800	0.000000	0.000000	0.000000	0.083300	0.000000	0.000000	0.000000	0.000000	0.000000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,919.63	1,919.63	1919.63	13,822,079	13,822,079
Total	1,919.63	1,919.63	1,919.63	13,822,079	13,822,079

Year 2023 Project Operational Fuel Calculation

California Air Resource Board (ARB). 2020.
EMFAC2017 Web Database.
Website: https://arb.ca.gov/emfac/2017/. Accessed March 11, 2021
EMFAC2017 (v1.0.2) E VMT = Vehicle Miles Traveled
Region Type: County FE = Fuel Economy
Region: CONTRA COSTA
Calendar Year: 2021
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption. Note 'day' in

Year	Type of Vehicle		
	On-Site Service Vehicles	Delivery Trucks and Vans	Heavy-Duty Trucks
2021	100% Zero Emission	33% Zero Emission, 67% Diesel	100% Diesel, Model 2014 or Later
2023	100% Zero Emission	65% Zero Emission, 35% Diesel	100% Diesel, Model 2014 or Later
2025	100% Zero Emission	80% Zero Emission, 20% Diesel	100% Zero Emission
2027	100% Zero Emission	100% Zero Emission	100% Zero Emission

Notes: Drayage vehicles would not be used in the North Richmond Warehouse Project (Anderson pers. comm.).

Note: Table from AQ and GHG Report provided in EIR appendix B.

Given *Calculations*

VehClass	MdlYr	Speed	Fuel	VMT	Consumption	Fuel Econom	VMT*FE	(CalEEMod)	Type VMT (CalEEMod	Electric Fleet	Fuel Consumption (Gallons)
Light Duty Passenger Vehicles											
LDA	Aggregated	Aggregated	GAS	14954127	481.1572	31.0795	4.65E+08	0.6979	13,822,079	1	301,514,315.16
LDA	Aggregated	Aggregated	DSL	159664.2	3.337399	47.84091	7638482				
						Sum of VMT*FE	**4.72E+08**				
						Total VMT	**15113792**				
						Weighted Average FE (miles/gallon)	**31.2566**				
Delivery Vehicles											
MDV	Aggregated	Aggregated	DSL	83935.84	3.174521	26.44047	2219303	0.2188	13,822,079	0.35	27,987,101.47
Heavy-Duty Trucks											
HHDT	Aggregated	Aggregated	DSL	598251.3	95.00836	6.296828	3767085	0.0833	13,822,079	1	7,250,036.70
										Total Fuel Consumption	**336,751,453.33**
											336,751,453.00

PASSENGER VEHICLE VMT (LDA), Delivery Vehicles VMT (MDV), and Heavy Duty Trucks VMT (HHD)

2021 - Contra Costa County, Annual

Annual VMT (miles): 13,822,079

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871
Unrefrigerated Warehouse-No Rail	0.697900	0.000000	0.000000	0.218800	0.000000	0.000000	0.000000	0.083300	0.000000	0.000000	0.000000	0.000000	0.000000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,919.63	1,919.63	1919.63	13,822,079	13,822,079
Total	1,919.63	1,919.63	1,919.63	13,822,079	13,822,079

Year 2025 Project Operational Fuel Calculation

California Air Resource Board (ARB). 2021. EMFAC2021 Web Database.
Website: https://arb.ca.gov/emfac/2017/. Accessed March 11, 2021
Source: EMFAC2021 (v1.0.0) Emissions Inventory VMT = Vehicle Miles Traveled
Region Type: County FE = Fuel Economy
Region: San Joaquin
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Year	Type of Vehicle		
	On-Site Service Vehicles	Delivery Trucks and Vans	Heavy-Duty Trucks
2021	100% Zero Emission	33% Zero Emission, 67% Diesel	100% Diesel, Model 2014 or Later
2023	100% Zero Emission	65% Zero Emission, 35% Diesel	100% Diesel, Model 2014 or Later
2025	100% Zero Emission	80% Zero Emission, 20% Diesel	100% Zero Emission
2027	100% Zero Emission	100% Zero Emission	100% Zero Emission

Notes: Drayage vehicles would not be used in the North Richmond Warehouse Project (Anderson pers. comm.).

Given *Calculations*

VehClass	MdlYr	Speed	Fuel	VMT	Fuel Consumption	Fuel Econom	VMT*FE	Fleet Mix (CalEEMod)	Vehicle Type VMT (CalEEMod)	Non-Electric Fleet Proportion	Fuel Consumption (Gallons)
Light Duty Passenger Vehicles											
LDA	Aggregated	Aggregated	GAS	14954127	481.1572	31.0795	4.65E+08	0.6979	13,822,079	1	301,514,315.16
LDA	Aggregated	Aggregated	DSL	159664.2	3.337399	47.84091	7638482				
						Sum of VMT*FE	**4.72E+08**				
						Total VMT	**15113792**				
						Weighted Average FE (miles/gallon)	**31.2566**				
Delivery Vehicles											
MDV	Aggregated	Aggregated	DSL	83935.84	3.174521	26.44047	2219303	0.2188	13,822,079	0.2	15,992,629.41

Total Fuel Consumption	**317,506,944.57**

317,506,944.00

PASSENGER VEHICLE VMT (LDA), Delivery Vehicles VMT (MDV), and Heavy Duty Trucks VMT (HHD)

2021 - Contra Costa County, Annual

Annual VMT (miles): 13,822,079

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871
Unrefrigerated Warehouse-No Rail	0.697900	0.000000	0.000000	0.218800	0.000000	0.000000	0.000000	0.083300	0.000000	0.000000	0.000000	0.000000	0.000000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,919.63	1,919.63	1919.63	13,822,079	13,822,079
Total	1,919.63	1,919.63	1,919.63	13,822,079	13,822,079

Proposed Operation Fuel Calculation

California Air Resource Board (ARB). 2021. EMFAC2021 Web Database.
Website: https://www.arb.ca.gov/emfac/emissions-inventory. Accessed January 29, 2021.
Source: EMFAC2021 (v1.0.0) Emissions Inventory
Region Type: County — VMT = Vehicle Miles Traveled
Region: San Joaquin — FE = Fuel Economy
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Year	Type of Vehicle		
	On-Site Service Vehicles	Delivery Trucks and Vans	Heavy-Duty Trucks
2021	100% Zero Emission	33% Zero Emission, 67% Diesel	100% Diesel, Model 2014 or Later
2023	100% Zero Emission	65% Zero Emission, 35% Diesel	100% Diesel, Model 2014 or Later
2025	100% Zero Emission	80% Zero Emission, 20% Diesel	100% Zero Emission
2027	100% Zero Emission	100% Zero Emission	100% Zero Emission

Notes: Drayage vehicles would not be used in the North Richmond Warehouse Project (Anderson pers. comm.).

Given *Calculations*

VehClass	MdlYr	Speed	Fuel	VMT	Fuel Consumption	Fuel Economy	VMT*FE	Fleet Mix (CalEEMod)	Vehicle Type VMT (CalEEMod)	Non-Electric Fleet Proportion	Fuel Consumption (Gallons)
Light Duty Passenger Vehicles											
LDA	Aggregated	Aggregated	GAS	14954127.48	481.157217	31.0795036	464766859	0.6979	13,822,079	1	301,514,315.16
LDA	Aggregated	Aggregated	DSL	159664.2225	3.33739923	47.8409119	7638482				
						Sum of VMT*FE	**472405341**				
						Total VMT	**15113791.7**				
						Weighted Average FE (miles/gallon)	**31.2566**				

Total Fuel Consumption (Gallons, Diesel &	**301,514,315.16**

301,514,315.00

PASSENGER VEHICLE VMT (LDA), Delivery Vehicles VMT (MDV), and Heavy Duty Trucks VMT (HHD)
2021 - Contra Costa County, Annual

Annual VMT (miles): 13,822,079

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871
Unrefrigerated Warehouse-No Rail	0.697900	0.000000	0.000000	0.218800	0.000000	0.000000	0.000000	0.083300	0.000000	0.000000	0.000000	0.000000	0.000000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,919.63	1,919.63	1919.63	13,822,079	13,822,079
Total	1,919.63	1,919.63	1,919.63	13,822,079	13,822,079

Operation Natural Gas Use

Source: AQ/GHG Appendix, CalEEMod Output

Scannell Properties - Contra Costa County, Annual

Date: March 10, 2021

kBTU/yr = kilo-British Thermal Units/year

CF = cubic feet

	Natural Gas Use
Parking Lot	0
Unrefrigerated Warehouse-No Rail	342889
Total	**342,889 kBTU/yr**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	342889	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	18.2979	18.2979	3.5000e-004	3.4000e-004	18.4066
Total		**1.8500e-003**	**0.0168**	**0.0141**	**1.0000e-004**		**1.2800e-003**	**1.2800e-003**		**1.2800e-003**	**1.2800e-003**	**0.0000**	**18.2979**	**18.2979**	**3.5000e-004**	**3.4000e-004**	**18.4066**

Operation Electricity Use

Source: AQ/GHG Appendix, CalEEMod Output

Scannell Properties Project- Contra Costa County, Annual

Date: March 10, 2021

Project Electricity Use

kWh/yr = kilowatt hours per year

Land Use	Electricity Use (kWh/yr)
Parking Lot	0
Unrefrigerated Warehouse-No Rail	0

Total **0 kWh/yr**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

B.4 - CalEEMod Output Files

THIS PAGE INTENTIONALLY LEFT BLANK

North Richmond Warehouse - Scenario 1 - 2021

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	330.97	1000sqft	20.18	330,974.00	0
Parking Lot	401.45	1000sqft	9.22	401,446.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	5			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

North Richmond Warehouse - Scenario 1 - 2021 - Contra Costa County, Annual

Project Characteristics - This file is for Scenario 1 construction and Year 2021 operational emissions. CO2 intensity factor from PG&E 2015.

Land Use - Quantities from 2/20/20 site plan.

Construction Phase - Construction schedule per Anderson pers. comm.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Demolition - Demoilition building square feet per Project Description.

Architectural Coating - VOC content per BAAQMD Regulation 8.

Vehicle Trips - Trip generation rate of 5.80 / KSF from Fehr & Peer 2020 and 2/20/20 site plan. Trip length per Fehr & Peers 2020. Apply seven days per week.

Area Coating - VOC content per BAAQMD Regulation 8.

Energy Use -

Energy Mitigation - Title 24 2019 Standards per California Energy Commission 2018.

Fleet Mix - 69.79% LDA, 21.88% MDV, 8.33% HHD from Fehr & Peers 2020.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	100.00
tblArchitecturalCoating	EF_Parking	150.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	150.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	100
tblAreaCoating	Area_EF_Parking	150	100
tblAreaCoating	Area_EF_Residential_Exterior	150	100
tblConstructionPhase	NumDays	30.00	15.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	45.00	22.00

tblConstructionPhase	NumDays	440.00	220.00
tblConstructionPhase	NumDays	35.00	17.00
tblConstructionPhase	NumDays	35.00	17.00
tblFleetMix	HHD	0.02	0.08
tblFleetMix	LDA	0.58	0.70
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.19	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.0830e-003	0.00
tblFleetMix	MCY	5.4540e-003	0.00
tblFleetMix	MDV	0.12	0.22
tblFleetMix	MH	8.7100e-004	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	1.6050e-003	0.00
tblFleetMix	SBUS	2.7460e-003	0.00
tblFleetMix	UBUS	1.8100e-003	0.00
tblGrading	AcresOfGrading	110.00	112.50
tblLandUse	LandUseSquareFeet	330,970.00	330,974.00
tblLandUse	LandUseSquareFeet	401,450.00	401,446.00
tblLandUse	LotAcreage	7.60	20.18
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	WorkerTripNumber	30.00	15.00
tblTripsAndVMT	WorkerTripNumber	35.00	18.00
tblTripsAndVMT	WorkerTripNumber	40.00	20.00
tblTripsAndVMT	WorkerTripNumber	30.00	15.00
tblVehicleTrips	CC_TL	7.30	21.21
tblVehicleTrips	CNW_TL	7.30	21.21
tblVehicleTrips	CW_TL	9.50	21.21
tblVehicleTrips	ST_TR	1.68	5.80
tblVehicleTrips	SU_TR	1.68	5.80
tblVehicleTrips	WD_TR	1.68	5.80

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.7310	7.0353	5.8646	0.0141	0.7290	0.2973	1.0262	0.2745	0.2779	0.5525	0.0000	1,258.2074	1,258.2074	0.2041	0.0000	1,263.3107
2022	1.6401	0.3450	0.4190	8.1000e-004	0.0149	0.0161	0.0309	4.0100e-003	0.0150	0.0190	0.0000	71.7092	71.7092	0.0153	0.0000	72.0905
Maximum	**1.6401**	**7.0353**	**5.8646**	**0.0141**	**0.7290**	**0.2973**	**1.0262**	**0.2745**	**0.2779**	**0.5525**	**0.0000**	**1,258.2074**	**1,258.2074**	**0.2041**	**0.0000**	**1,263.3107**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.7310	7.0353	5.8646	0.0141	0.7290	0.2973	1.0262	0.2745	0.2779	0.5525	0.0000	1,258.2065	1,258.2065	0.2041	0.0000	1,263.3099
2022	1.6401	0.3450	0.4190	8.1000e-004	0.0149	0.0161	0.0309	4.0100e-003	0.0150	0.0190	0.0000	71.7092	71.7092	0.0153	0.0000	72.0904
Maximum	**1.6401**	**7.0353**	**5.8646**	**0.0141**	**0.7290**	**0.2973**	**1.0262**	**0.2745**	**0.2779**	**0.5525**	**0.0000**	**1,258.2065**	**1,258.2065**	**0.2041**	**0.0000**	**1,263.3099**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2021**	**3-31-2021**	2.5674	2.5674
2	**4-1-2021**	**6-30-2021**	1.7211	1.7211
3	**7-1-2021**	**9-30-2021**	1.7400	1.7400
4	**10-1-2021**	**12-31-2021**	1.7492	1.7492
5	**1-1-2022**	**3-31-2022**	1.9515	1.9515
		Highest	2.5674	2.5674

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4782	6.0000e-005	6.7600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Energy	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	208.0375	208.0375	0.0188	4.2500e-003	209.7735
Mobile	0.7374	8.9465	13.5079	0.0669	5.1337	0.0513	5.1850	1.3689	0.0481	1.4170	0.0000	6,192.1333	6,192.1333	0.1797	0.0000	6,196.6265
Waste						0.0000	0.0000		0.0000	0.0000	63.1525	0.0000	63.1525	3.7322	0.0000	156.4577
Water						0.0000	0.0000		0.0000	0.0000	24.2816	54.4768	78.7584	2.4994	0.0600	159.1278
Total	**2.2180**	**8.9691**	**13.5336**	**0.0671**	**5.1337**	**0.0530**	**5.1867**	**1.3689**	**0.0498**	**1.4187**	**87.4341**	**6,454.6607**	**6,542.0948**	**6.4302**	**0.0643**	**6,721.9994**

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	1.4782	6.0000e-005	6.7600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Energy	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	198.6505	198.6505	0.0184	4.0700e-003	200.3221
Mobile	0.7374	8.9465	13.5079	0.0669	5.1337	0.0513	5.1850	1.3689	0.0481	1.4170	0.0000	6,192.1333	6,192.1333	0.1797	0.0000	6,196.6265
Waste						0.0000	0.0000		0.0000	0.0000	63.1525	0.0000	63.1525	3.7322	0.0000	156.4577
Water						0.0000	0.0000		0.0000	0.0000	24.2816	54.4768	78.7584	2.4994	0.0600	159.1278
Total	**2.2174**	**8.9633**	**13.5287**	**0.0670**	**5.1337**	**0.0526**	**5.1863**	**1.3689**	**0.0494**	**1.4183**	**87.4341**	**6,445.2737**	**6,532.7078**	**6.4298**	**0.0641**	**6,712.5480**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.03**	**0.06**	**0.04**	**0.06**	**0.00**	**0.81**	**0.01**	**0.00**	**0.86**	**0.03**	**0.00**	**0.15**	**0.14**	**0.01**	**0.28**	**0.14**

3.0 Construction Detail

Construction Phase

North Richmond Warehouse - Scenario 1 - 2021 - Contra Costa County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2021	1/21/2021	5	15	
2	Site Preparation	Site Preparation	1/22/2021	2/4/2021	5	10	
3	Grading	Grading	2/5/2021	3/8/2021	5	22	
4	Building Construction	Building Construction	3/9/2021	1/10/2022	5	220	
5	Paving	Paving	1/11/2022	2/2/2022	5	17	
6	Architectural Coating	Architectural Coating	2/3/2022	2/25/2022	5	17	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 9.22

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 496,461; Non-Residential Outdoor: 165,487; Striped Parking Area: 24,087 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

North Richmond Warehouse - Scenario 1 - 2021 - Contra Costa County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	2	8.00	81	0.73
Demolition	Excavators	6	8.00	158	0.38
Demolition	Rubber Tired Dozers	4	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	6	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	8	8.00	97	0.37
Grading	Excavators	4	8.00	158	0.38
Grading	Graders	2	8.00	187	0.41
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	4	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Cranes	2	7.00	231	0.29
Building Construction	Forklifts	6	8.00	89	0.20
Building Construction	Generator Sets	2	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	6	7.00	97	0.37
Building Construction	Welders	2	8.00	46	0.45
Paving	Pavers	4	8.00	130	0.42
Paving	Paving Equipment	4	8.00	132	0.36
Paving	Rollers	4	8.00	80	0.38
Architectural Coating	Air Compressors	2	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	12	15.00	0.00	60.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	14	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	16	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	18	308.00	120.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	12	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	2	62.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.5000e-003	0.0000	6.5000e-003	9.8000e-004	0.0000	9.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0012	51.0012	0.0144	0.0000	51.3601
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**6.5000e-003**	**0.0233**	**0.0298**	**9.8000e-004**	**0.0216**	**0.0226**	**0.0000**	**51.0012**	**51.0012**	**0.0144**	**0.0000**	**51.3601**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3000e-004	8.0300e-003	1.5900e-003	2.0000e-005	5.1000e-004	3.0000e-005	5.3000e-004	1.4000e-004	2.0000e-005	1.6000e-004	0.0000	2.2468	2.2468	1.0000e-004	0.0000	2.2492
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.5800e-003	1.0000e-005	8.9000e-004	1.0000e-005	9.0000e-004	2.4000e-004	1.0000e-005	2.4000e-004	0.0000	0.7550	0.7550	2.0000e-005	0.0000	0.7554
Total	**5.8000e-004**	**8.2700e-003**	**4.1700e-003**	**3.0000e-005**	**1.4000e-003**	**4.0000e-005**	**1.4300e-003**	**3.8000e-004**	**3.0000e-005**	**4.0000e-004**	**0.0000**	**3.0018**	**3.0018**	**1.2000e-004**	**0.0000**	**3.0047**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.5000e-003	0.0000	6.5000e-003	9.8000e-004	0.0000	9.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0011	51.0011	0.0144	0.0000	51.3600
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**6.5000e-003**	**0.0233**	**0.0298**	**9.8000e-004**	**0.0216**	**0.0226**	**0.0000**	**51.0011**	**51.0011**	**0.0144**	**0.0000**	**51.3600**

3.2 Demolition - 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	2.3000e-004	8.0300e-003	1.5900e-003	2.0000e-005	5.1000e-004	3.0000e-005	5.3000e-004	1.4000e-004	2.0000e-005	1.6000e-004	0.0000	2.2468	2.2468	1.0000e-004	0.0000	2.2492
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.5800e-003	1.0000e-005	8.9000e-004	1.0000e-005	9.0000e-004	2.4000e-004	1.0000e-005	2.4000e-004	0.0000	0.7550	0.7550	2.0000e-005	0.0000	0.7554
Total	**5.8000e-004**	**8.2700e-003**	**4.1700e-003**	**3.0000e-005**	**1.4000e-003**	**4.0000e-005**	**1.4300e-003**	**3.8000e-004**	**3.0000e-005**	**4.0000e-004**	**0.0000**	**3.0018**	**3.0018**	**1.2000e-004**	**0.0000**	**3.0047**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.9000e-004	2.0600e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6040	0.6040	1.0000e-005	0.0000	0.6044
Total	**2.8000e-004**	**1.9000e-004**	**2.0600e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6040**	**0.6040**	**1.0000e-005**	**0.0000**	**0.6044**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7060
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7060**

3.3 Site Preparation - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.9000e-004	2.0600e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6040	0.6040	1.0000e-005	0.0000	0.6044
Total	**2.8000e-004**	**1.9000e-004**	**2.0600e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6040**	**0.6040**	**1.0000e-005**	**0.0000**	**0.6044**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1921	0.0000	0.1921	0.0793	0.0000	0.0793	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0922	1.0208	0.6793	1.3600e-003		0.0437	0.0437		0.0402	0.0402	0.0000	119.8890	119.8890	0.0388	0.0000	120.8583
Total	**0.0922**	**1.0208**	**0.6793**	**1.3600e-003**	**0.1921**	**0.0437**	**0.2358**	**0.0793**	**0.0402**	**0.1195**	**0.0000**	**119.8890**	**119.8890**	**0.0388**	**0.0000**	**120.8583**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.8000e-004	5.0400e-003	2.0000e-005	1.7400e-003	1.0000e-005	1.7600e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.4765	1.4765	3.0000e-005	0.0000	1.4773
Total	**6.8000e-004**	**4.8000e-004**	**5.0400e-003**	**2.0000e-005**	**1.7400e-003**	**1.0000e-005**	**1.7600e-003**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**0.0000**	**1.4765**	**1.4765**	**3.0000e-005**	**0.0000**	**1.4773**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1921	0.0000	0.1921	0.0793	0.0000	0.0793	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0922	1.0208	0.6793	1.3600e-003		0.0437	0.0437		0.0402	0.0402	0.0000	119.8888	119.8888	0.0388	0.0000	120.8582
Total	**0.0922**	**1.0208**	**0.6793**	**1.3600e-003**	**0.1921**	**0.0437**	**0.2358**	**0.0793**	**0.0402**	**0.1195**	**0.0000**	**119.8888**	**119.8888**	**0.0388**	**0.0000**	**120.8582**

3.4 Grading - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.8000e-004	5.0400e-003	2.0000e-005	1.7400e-003	1.0000e-005	1.7600e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.4765	1.4765	3.0000e-005	0.0000	1.4773
Total	**6.8000e-004**	**4.8000e-004**	**5.0400e-003**	**2.0000e-005**	**1.7400e-003**	**1.0000e-005**	**1.7600e-003**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**0.0000**	**1.4765**	**1.4765**	**3.0000e-005**	**0.0000**	**1.4773**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4068	3.7305	3.5471	5.7600e-003		0.2051	0.2051		0.1929	0.1929	0.0000	495.7038	495.7038	0.1196	0.0000	498.6936
Total	**0.4068**	**3.7305**	**3.5471**	**5.7600e-003**		**0.2051**	**0.2051**		**0.1929**	**0.1929**	**0.0000**	**495.7038**	**495.7038**	**0.1196**	**0.0000**	**498.6936**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0420	1.3272	0.3372	3.4700e-003	0.0845	2.9800e-003	0.0874	0.0244	2.8500e-003	0.0273	0.0000	331.9198	331.9198	0.0154	0.0000	332.3051
Worker	0.1021	0.0713	0.7547	2.4500e-003	0.2614	1.7000e-003	0.2631	0.0695	1.5600e-003	0.0711	0.0000	221.1756	221.1756	5.0300e-003	0.0000	221.3013
Total	**0.1441**	**1.3985**	**1.0919**	**5.9200e-003**	**0.3458**	**4.6800e-003**	**0.3505**	**0.0939**	**4.4100e-003**	**0.0983**	**0.0000**	**553.0955**	**553.0955**	**0.0204**	**0.0000**	**553.6064**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4068	3.7305	3.5471	5.7600e-003		0.2051	0.2051		0.1929	0.1929	0.0000	495.7032	495.7032	0.1196	0.0000	498.6930
Total	**0.4068**	**3.7305**	**3.5471**	**5.7600e-003**		**0.2051**	**0.2051**		**0.1929**	**0.1929**	**0.0000**	**495.7032**	**495.7032**	**0.1196**	**0.0000**	**498.6930**

3.5 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0420	1.3272	0.3372	3.4700e-003	0.0845	2.9800e-003	0.0874	0.0244	2.8500e-003	0.0273	0.0000	331.9198	331.9198	0.0154	0.0000	332.3051
Worker	0.1021	0.0713	0.7547	2.4500e-003	0.2614	1.7000e-003	0.2631	0.0695	1.5600e-003	0.0711	0.0000	221.1756	221.1756	5.0300e-003	0.0000	221.3013
Total	**0.1441**	**1.3985**	**1.0919**	**5.9200e-003**	**0.3458**	**4.6800e-003**	**0.3505**	**0.0939**	**4.4100e-003**	**0.0983**	**0.0000**	**553.0955**	**553.0955**	**0.0204**	**0.0000**	**553.6064**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0102	0.0937	0.0982	1.6000e-004		4.8500e-003	4.8500e-003		4.5700e-003	4.5700e-003	0.0000	13.9035	13.9035	3.3300e-003	0.0000	13.9868
Total	**0.0102**	**0.0937**	**0.0982**	**1.6000e-004**		**4.8500e-003**	**4.8500e-003**		**4.5700e-003**	**4.5700e-003**	**0.0000**	**13.9035**	**13.9035**	**3.3300e-003**	**0.0000**	**13.9868**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-003	0.0352	8.8700e-003	1.0000e-004	2.3700e-003	7.0000e-005	2.4400e-003	6.8000e-004	7.0000e-005	7.5000e-004	0.0000	9.2180	9.2180	4.1000e-004	0.0000	9.2282
Worker	2.6600e-003	1.7900e-003	0.0194	7.0000e-005	7.3300e-003	5.0000e-005	7.3700e-003	1.9500e-003	4.0000e-005	1.9900e-003	0.0000	5.9709	5.9709	1.3000e-004	0.0000	5.9741
Total	**3.7600e-003**	**0.0369**	**0.0283**	**1.7000e-004**	**9.7000e-003**	**1.2000e-004**	**9.8100e-003**	**2.6300e-003**	**1.1000e-004**	**2.7400e-003**	**0.0000**	**15.1889**	**15.1889**	**5.4000e-004**	**0.0000**	**15.2023**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0102	0.0937	0.0982	1.6000e-004		4.8500e-003	4.8500e-003		4.5700e-003	4.5700e-003	0.0000	13.9035	13.9035	3.3300e-003	0.0000	13.9868
Total	**0.0102**	**0.0937**	**0.0982**	**1.6000e-004**		**4.8500e-003**	**4.8500e-003**		**4.5700e-003**	**4.5700e-003**	**0.0000**	**13.9035**	**13.9035**	**3.3300e-003**	**0.0000**	**13.9868**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-003	0.0352	8.8700e-003	1.0000e-004	2.3700e-003	7.0000e-005	2.4400e-003	6.8000e-004	7.0000e-005	7.5000e-004	0.0000	9.2180	9.2180	4.1000e-004	0.0000	9.2282
Worker	2.6600e-003	1.7900e-003	0.0194	7.0000e-005	7.3300e-003	5.0000e-005	7.3700e-003	1.9500e-003	4.0000e-005	1.9900e-003	0.0000	5.9709	5.9709	1.3000e-004	0.0000	5.9741
Total	**3.7600e-003**	**0.0369**	**0.0283**	**1.7000e-004**	**9.7000e-003**	**1.2000e-004**	**9.8100e-003**	**2.6300e-003**	**1.1000e-004**	**2.7400e-003**	**0.0000**	**15.1889**	**15.1889**	**5.4000e-004**	**0.0000**	**15.2023**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0188	0.1891	0.2479	3.9000e-004		9.6500e-003	9.6500e-003		8.8800e-003	8.8800e-003	0.0000	34.0469	34.0469	0.0110	0.0000	34.3221
Paving	0.0121					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0308**	**0.1891**	**0.2479**	**3.9000e-004**		**9.6500e-003**	**9.6500e-003**		**8.8800e-003**	**8.8800e-003**	**0.0000**	**34.0469**	**34.0469**	**0.0110**	**0.0000**	**34.3221**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.5000e-004	2.6800e-003	1.0000e-005	1.0100e-003	1.0000e-005	1.0200e-003	2.7000e-004	1.0000e-005	2.7000e-004	0.0000	0.8239	0.8239	2.0000e-005	0.0000	0.8244
Total	**3.7000e-004**	**2.5000e-004**	**2.6800e-003**	**1.0000e-005**	**1.0100e-003**	**1.0000e-005**	**1.0200e-003**	**2.7000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.8239**	**0.8239**	**2.0000e-005**	**0.0000**	**0.8244**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0188	0.1891	0.2479	3.9000e-004		9.6500e-003	9.6500e-003		8.8800e-003	8.8800e-003	0.0000	34.0468	34.0468	0.0110	0.0000	34.3221
Paving	0.0121					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0308**	**0.1891**	**0.2479**	**3.9000e-004**		**9.6500e-003**	**9.6500e-003**		**8.8800e-003**	**8.8800e-003**	**0.0000**	**34.0468**	**34.0468**	**0.0110**	**0.0000**	**34.3221**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.5000e-004	2.6800e-003	1.0000e-005	1.0100e-003	1.0000e-005	1.0200e-003	2.7000e-004	1.0000e-005	2.7000e-004	0.0000	0.8239	0.8239	2.0000e-005	0.0000	0.8244
Total	**3.7000e-004**	**2.5000e-004**	**2.6800e-003**	**1.0000e-005**	**1.0100e-003**	**1.0000e-005**	**1.0200e-003**	**2.7000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.8239**	**0.8239**	**2.0000e-005**	**0.0000**	**0.8244**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5899					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4800e-003	0.0239	0.0308	5.0000e-005		1.3900e-003	1.3900e-003		1.3900e-003	1.3900e-003	0.0000	4.3405	4.3405	2.8000e-004	0.0000	4.3476
Total	**1.5934**	**0.0239**	**0.0308**	**5.0000e-005**		**1.3900e-003**	**1.3900e-003**		**1.3900e-003**	**1.3900e-003**	**0.0000**	**4.3405**	**4.3405**	**2.8000e-004**	**0.0000**	**4.3476**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.0200e-003	0.0111	4.0000e-005	4.1800e-003	3.0000e-005	4.2100e-003	1.1100e-003	2.0000e-005	1.1400e-003	0.0000	3.4055	3.4055	7.0000e-005	0.0000	3.4073
Total	**1.5200e-003**	**1.0200e-003**	**0.0111**	**4.0000e-005**	**4.1800e-003**	**3.0000e-005**	**4.2100e-003**	**1.1100e-003**	**2.0000e-005**	**1.1400e-003**	**0.0000**	**3.4055**	**3.4055**	**7.0000e-005**	**0.0000**	**3.4073**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5899					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4800e-003	0.0239	0.0308	5.0000e-005		1.3900e-003	1.3900e-003		1.3900e-003	1.3900e-003	0.0000	4.3405	4.3405	2.8000e-004	0.0000	4.3476
Total	**1.5934**	**0.0239**	**0.0308**	**5.0000e-005**		**1.3900e-003**	**1.3900e-003**		**1.3900e-003**	**1.3900e-003**	**0.0000**	**4.3405**	**4.3405**	**2.8000e-004**	**0.0000**	**4.3476**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.0200e-003	0.0111	4.0000e-005	4.1800e-003	3.0000e-005	4.2100e-003	1.1100e-003	2.0000e-005	1.1400e-003	0.0000	3.4055	3.4055	7.0000e-005	0.0000	3.4073
Total	**1.5200e-003**	**1.0200e-003**	**0.0111**	**4.0000e-005**	**4.1800e-003**	**3.0000e-005**	**4.2100e-003**	**1.1100e-003**	**2.0000e-005**	**1.1400e-003**	**0.0000**	**3.4055**	**3.4055**	**7.0000e-005**	**0.0000**	**3.4073**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.7374	8.9465	13.5079	0.0669	5.1337	0.0513	5.1850	1.3689	0.0481	1.4170	0.0000	6,192.1333	6,192.1333	0.1797	0.0000	6,196.6265
Unmitigated	0.7374	8.9465	13.5079	0.0669	5.1337	0.0513	5.1850	1.3689	0.0481	1.4170	0.0000	6,192.1333	6,192.1333	0.1797	0.0000	6,196.6265

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,919.63	1,919.63	1919.63	13,822,079	13,822,079
Total	1,919.63	1,919.63	1,919.63	13,822,079	13,822,079

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	21.21	21.21	21.21	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871
Unrefrigerated Warehouse-No Rail	0.697900	0.000000	0.000000	0.218800	0.000000	0.000000	0.000000	0.083300	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	180.3527	180.3527	0.0180	3.7300e-003	181.9155
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	183.4873	183.4873	0.0184	3.8000e-003	185.0773
NaturalGas Mitigated	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	18.2979	18.2979	3.5000e-004	3.4000e-004	18.4066
NaturalGas Unmitigated	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5502	24.5502	4.7000e-004	4.5000e-004	24.6961

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	460054	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5502	24.5502	4.7000e-004	4.5000e-004	24.6961
Total		**2.4800e-003**	**0.0226**	**0.0189**	**1.4000e-004**		**1.7100e-003**	**1.7100e-003**		**1.7100e-003**	**1.7100e-003**	**0.0000**	**24.5502**	**24.5502**	**4.7000e-004**	**4.5000e-004**	**24.6961**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	342889	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	18.2979	18.2979	3.5000e-004	3.4000e-004	18.4066
Total		**1.8500e-003**	**0.0168**	**0.0141**	**1.0000e-004**		**1.2800e-003**	**1.2800e-003**		**1.2800e-003**	**1.2800e-003**	**0.0000**	**18.2979**	**18.2979**	**3.5000e-004**	**3.4000e-004**	**18.4066**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	140506	18.4824	1.8500e-003	3.8000e-004	18.6426
Unrefrigerated Warehouse-No Rail	1.25439e+006	165.0049	0.0165	3.4100e-003	166.4348
Total		**183.4873**	**0.0184**	**3.7900e-003**	**185.0773**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	140506	18.4824	1.8500e-003	3.8000e-004	18.6426
Unrefrigerated Warehouse-No Rail	1.23056e+006	161.8702	0.0162	3.3500e-003	163.2729
Total		**180.3527**	**0.0180**	**3.7300e-003**	**181.9155**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.4782	6.0000e-005	6.7600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Unmitigated	1.4782	6.0000e-005	6.7600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140

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	0.1590					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3186					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.3000e-004	6.0000e-005	6.7600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Total	**1.4782**	**6.0000e-005**	**6.7600e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0131**	**0.0131**	**3.0000e-005**	**0.0000**	**0.0140**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1590					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3186					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.3000e-004	6.0000e-005	6.7600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Total	**1.4782**	**6.0000e-005**	**6.7600e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0131**	**0.0131**	**3.0000e-005**	**0.0000**	**0.0140**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	78.7584	2.4994	0.0600	159.1278
Unmitigated	78.7584	2.4994	0.0600	159.1278

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	76.5368 / 0	78.7584	2.4994	0.0600	159.1278
Total		**78.7584**	**2.4994**	**0.0600**	**159.1278**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	76.5368 / 0	78.7584	2.4994	0.0600	159.1278
Total		**78.7584**	**2.4994**	**0.0600**	**159.1278**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	63.1525	3.7322	0.0000	156.4577
Unmitigated	63.1525	3.7322	0.0000	156.4577

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	311.11	63.1525	3.7322	0.0000	156.4577
Total		**63.1525**	**3.7322**	**0.0000**	**156.4577**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	311.11	63.1525	3.7322	0.0000	156.4577
Total		**63.1525**	**3.7322**	**0.0000**	**156.4577**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

North Richmond Warehouse - Scenario 4 - 2021

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	330.97	1000sqft	20.18	330,974.00	0
Parking Lot	401.45	1000sqft	9.22	401,446.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	5			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - This file is for operational emissions only. Not valid for construction. CO2 intensity factor from PG&E 2015.

Land Use - Quantities from 2/20/20 site plan.

Construction Phase - Construction schedule per Anderson pers. comm.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Demolition - Demoilition building square feet per Project Description.

Architectural Coating - VOC content per BAAQMD Regulation 8.

Vehicle Trips - Trip generation rate of 5.80 / KSF from Fehr & Peer 2020 and 2/20/20 site plan. Trip length per Fehr & Peers 2020. Apply seven days per week.

Vehicle Emission Factors - MDV and HHD rates are specific for this scenario and year.

Vehicle Emission Factors - MDV and HHD rates are specific for this scenario and year.

Vehicle Emission Factors - MDV and HHD rates are specific for this scenario and year.

Area Coating - VOC content per BAAQMD Regulation 8.

Energy Use -

Energy Mitigation - Title 24 2019 Standards per California Energy Commission 2018, and on-site photovoltaic electricity generation for 100% of building load.

Fleet Mix - 69.79% LDA, 21.88% MDV, 8.33% HHD from Fehr & Peers 2020.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	100.00
tblArchitecturalCoating	EF_Parking	150.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	150.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	100
tblAreaCoating	Area_EF_Parking	150	100
tblAreaCoating	Area_EF_Residential_Exterior	150	100

tblConstructionPhase	NumDays	30.00	15.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	45.00	22.00
tblConstructionPhase	NumDays	440.00	220.00
tblConstructionPhase	NumDays	35.00	17.00
tblConstructionPhase	NumDays	35.00	17.00
tblFleetMix	HHD	0.02	0.08
tblFleetMix	LDA	0.58	0.70
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.19	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.0830e-003	0.00
tblFleetMix	MCY	5.4540e-003	0.00
tblFleetMix	MDV	0.12	0.22
tblFleetMix	MH	8.7100e-004	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	1.6050e-003	0.00
tblFleetMix	SBUS	2.7460e-003	0.00
tblFleetMix	UBUS	1.8100e-003	0.00
tblGrading	AcresOfGrading	110.00	112.50
tblLandUse	LandUseSquareFeet	330,970.00	330,974.00
tblLandUse	LandUseSquareFeet	401,450.00	401,446.00
tblLandUse	LotAcreage	7.60	20.18
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	WorkerTripNumber	30.00	15.00
tblTripsAndVMT	WorkerTripNumber	35.00	18.00
tblTripsAndVMT	WorkerTripNumber	40.00	20.00
tblTripsAndVMT	WorkerTripNumber	30.00	15.00
tblVehicleEF	HHD	0.62	0.02
tblVehicleEF	HHD	0.05	8.5700e-004
tblVehicleEF	HHD	0.12	0.00
tblVehicleEF	HHD	2.56	7.73
tblVehicleEF	HHD	0.92	0.19
tblVehicleEF	HHD	2.99	0.00
tblVehicleEF	HHD	4,622.54	1,240.58

tblVehicleEF	HHD	1,632.59	1,309.03
tblVehicleEF	HHD	8.73	0.00
tblVehicleEF	HHD	21.39	6.18
tblVehicleEF	HHD	3.99	1.87
tblVehicleEF	HHD	19.83	2.43
tblVehicleEF	HHD	0.02	2.2260e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	1.0100e-004	0.00
tblVehicleEF	HHD	0.02	2.1300e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8040e-003	8.8880e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	9.2000e-005	0.00
tblVehicleEF	HHD	9.3000e-005	0.00
tblVehicleEF	HHD	5.1840e-003	0.00
tblVehicleEF	HHD	0.66	0.52
tblVehicleEF	HHD	6.0000e-005	0.00
tblVehicleEF	HHD	0.14	0.02
tblVehicleEF	HHD	4.5200e-004	0.00
tblVehicleEF	HHD	0.10	0.00
tblVehicleEF	HHD	0.04	0.01
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.3700e-004	0.00
tblVehicleEF	HHD	9.3000e-005	0.00
tblVehicleEF	HHD	5.1840e-003	0.00

tblVehicleEF	HHD	0.76	0.60
tblVehicleEF	HHD	6.0000e-005	0.00
tblVehicleEF	HHD	0.19	0.02
tblVehicleEF	HHD	4.5200e-004	0.00
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	0.58	0.03
tblVehicleEF	HHD	0.05	8.5700e-004
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	1.87	7.63
tblVehicleEF	HHD	0.93	0.19
tblVehicleEF	HHD	2.72	0.00
tblVehicleEF	HHD	4,895.40	1,224.30
tblVehicleEF	HHD	1,632.59	1,309.03
tblVehicleEF	HHD	8.73	0.00
tblVehicleEF	HHD	22.07	5.87
tblVehicleEF	HHD	3.84	1.80
tblVehicleEF	HHD	19.81	2.43
tblVehicleEF	HHD	0.02	1.9780e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	1.0100e-004	0.00
tblVehicleEF	HHD	0.02	1.8930e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8040e-003	8.8880e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	9.2000e-005	0.00

tblVehicleEF	HHD	2.5700e-004	0.00
tblVehicleEF	HHD	5.8010e-003	0.00
tblVehicleEF	HHD	0.62	0.55
tblVehicleEF	HHD	1.6000e-004	0.00
tblVehicleEF	HHD	0.14	0.02
tblVehicleEF	HHD	4.5000e-004	0.00
tblVehicleEF	HHD	0.09	0.00
tblVehicleEF	HHD	0.05	0.01
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.3300e-004	0.00
tblVehicleEF	HHD	2.5700e-004	0.00
tblVehicleEF	HHD	5.8010e-003	0.00
tblVehicleEF	HHD	0.72	0.63
tblVehicleEF	HHD	1.6000e-004	0.00
tblVehicleEF	HHD	0.19	0.02
tblVehicleEF	HHD	4.5000e-004	0.00
tblVehicleEF	HHD	0.10	0.00
tblVehicleEF	HHD	0.67	0.02
tblVehicleEF	HHD	0.04	8.5700e-004
tblVehicleEF	HHD	0.13	0.00
tblVehicleEF	HHD	3.52	7.87
tblVehicleEF	HHD	0.91	0.19
tblVehicleEF	HHD	3.25	0.00
tblVehicleEF	HHD	4,245.74	1,263.08
tblVehicleEF	HHD	1,632.59	1,309.03
tblVehicleEF	HHD	8.73	0.00
tblVehicleEF	HHD	20.45	6.61

tblVehicleEF	HHD	4.06	1.90
tblVehicleEF	HHD	19.85	2.43
tblVehicleEF	HHD	0.02	2.5690e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	1.0100e-004	0.00
tblVehicleEF	HHD	0.02	2.4580e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8040e-003	8.8880e-003
tblVehicleEF	HHD	0.02	0.02
tblVehicleEF	HHD	9.2000e-005	0.00
tblVehicleEF	HHD	3.2000e-005	0.00
tblVehicleEF	HHD	5.5160e-003	0.00
tblVehicleEF	HHD	0.71	0.48
tblVehicleEF	HHD	2.3000e-005	0.00
tblVehicleEF	HHD	0.14	0.02
tblVehicleEF	HHD	4.9700e-004	0.00
tblVehicleEF	HHD	0.11	0.00
tblVehicleEF	HHD	0.04	0.01
tblVehicleEF	HHD	0.02	0.01
tblVehicleEF	HHD	1.4200e-004	0.00
tblVehicleEF	HHD	3.2000e-005	0.00
tblVehicleEF	HHD	5.5160e-003	0.00
tblVehicleEF	HHD	0.82	0.55
tblVehicleEF	HHD	2.3000e-005	0.00
tblVehicleEF	HHD	0.19	0.02

tblVehicleEF	HHD	4.9700e-004	0.00
tblVehicleEF	HHD	0.12	0.00
tblVehicleEF	MDV	0.01	7.8578e-003
tblVehicleEF	MDV	0.02	0.01
tblVehicleEF	MDV	1.31	0.88
tblVehicleEF	MDV	3.58	2.40
tblVehicleEF	MDV	490.73	328.79
tblVehicleEF	MDV	110.28	73.89
tblVehicleEF	MDV	0.17	0.11
tblVehicleEF	MDV	0.33	0.22
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	8.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.8190e-003	1.2187e-003
tblVehicleEF	MDV	2.5330e-003	1.6971e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	1.6780e-003	1.1243e-003
tblVehicleEF	MDV	2.3310e-003	1.5618e-003
tblVehicleEF	MDV	0.06	0.04
tblVehicleEF	MDV	0.19	0.13
tblVehicleEF	MDV	0.07	0.05
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.11	0.07
tblVehicleEF	MDV	0.28	0.19
tblVehicleEF	MDV	4.9170e-003	3.2944e-003
tblVehicleEF	MDV	1.1660e-003	7.8122e-004
tblVehicleEF	MDV	0.06	0.04

tblVehicleEF	MDV	0.19	0.13
tblVehicleEF	MDV	0.07	0.05
tblVehicleEF	MDV	0.05	0.03
tblVehicleEF	MDV	0.11	0.07
tblVehicleEF	MDV	0.31	0.20
tblVehicleEF	MDV	0.01	8.8541e-003
tblVehicleEF	MDV	0.02	0.01
tblVehicleEF	MDV	1.56	1.05
tblVehicleEF	MDV	2.75	1.84
tblVehicleEF	MDV	534.39	358.04
tblVehicleEF	MDV	110.28	73.89
tblVehicleEF	MDV	0.15	0.10
tblVehicleEF	MDV	0.29	0.19
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	8.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.8190e-003	1.2187e-003
tblVehicleEF	MDV	2.5330e-003	1.6971e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	1.6780e-003	1.1243e-003
tblVehicleEF	MDV	2.3310e-003	1.5618e-003
tblVehicleEF	MDV	0.16	0.11
tblVehicleEF	MDV	0.22	0.15
tblVehicleEF	MDV	0.15	0.10
tblVehicleEF	MDV	0.04	0.02
tblVehicleEF	MDV	0.10	0.07
tblVehicleEF	MDV	0.22	0.15

tblVehicleEF	MDV	5.3560e-003	3.5885e-003
tblVehicleEF	MDV	1.1510e-003	7.7117e-004
tblVehicleEF	MDV	0.16	0.11
tblVehicleEF	MDV	0.22	0.15
tblVehicleEF	MDV	0.15	0.10
tblVehicleEF	MDV	0.05	0.03
tblVehicleEF	MDV	0.10	0.07
tblVehicleEF	MDV	0.25	0.16
tblVehicleEF	MDV	0.01	7.6769e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	1.30	0.87
tblVehicleEF	MDV	4.25	2.85
tblVehicleEF	MDV	484.74	324.78
tblVehicleEF	MDV	110.28	73.89
tblVehicleEF	MDV	0.18	0.12
tblVehicleEF	MDV	0.36	0.24
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	8.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.8190e-003	1.2187e-003
tblVehicleEF	MDV	2.5330e-003	1.6971e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	1.6780e-003	1.1243e-003
tblVehicleEF	MDV	2.3310e-003	1.5618e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.20	0.14
tblVehicleEF	MDV	0.03	0.02

tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.13	0.09
tblVehicleEF	MDV	0.32	0.21
tblVehicleEF	MDV	4.8570e-003	3.2542e-003
tblVehicleEF	MDV	1.1780e-003	7.8926e-004
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.20	0.14
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.05	0.03
tblVehicleEF	MDV	0.13	0.09
tblVehicleEF	MDV	0.35	0.23
tblVehicleTrips	CC_TL	7.30	21.21
tblVehicleTrips	CNW_TL	7.30	21.21
tblVehicleTrips	CW_TL	9.50	21.21
tblVehicleTrips	ST_TR	1.68	5.80
tblVehicleTrips	SU_TR	1.68	5.80
tblVehicleTrips	WD_TR	1.68	5.80

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.7310	7.0353	5.8646	0.0141	0.7290	0.2973	1.0262	0.2745	0.2779	0.5525	0.0000	1,258.2074	1,258.2074	0.2041	0.0000	1,263.3107
2022	1.6401	0.3450	0.4190	8.1000e-004	0.0149	0.0161	0.0309	4.0100e-003	0.0150	0.0190	0.0000	71.7092	71.7092	0.0153	0.0000	72.0905
Maximum	**1.6401**	**7.0353**	**5.8646**	**0.0141**	**0.7290**	**0.2973**	**1.0262**	**0.2745**	**0.2779**	**0.5525**	**0.0000**	**1,258.2074**	**1,258.2074**	**0.2041**	**0.0000**	**1,263.3107**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.7310	7.0353	5.8646	0.0141	0.7290	0.2973	1.0262	0.2745	0.2779	0.5525	0.0000	1,258.2065	1,258.2065	0.2041	0.0000	1,263.3099
2022	1.6401	0.3450	0.4190	8.1000e-004	0.0149	0.0161	0.0309	4.0100e-003	0.0150	0.0190	0.0000	71.7092	71.7092	0.0153	0.0000	72.0904
Maximum	**1.6401**	**7.0353**	**5.8646**	**0.0141**	**0.7290**	**0.2973**	**1.0262**	**0.2745**	**0.2779**	**0.5525**	**0.0000**	**1,258.2065**	**1,258.2065**	**0.2041**	**0.0000**	**1,263.3099**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2021**	**3-31-2021**	2.5674	2.5674
2	**4-1-2021**	**6-30-2021**	1.7211	1.7211
3	**7-1-2021**	**9-30-2021**	1.7400	1.7400
4	**10-1-2021**	**12-31-2021**	1.7492	1.7492
5	**1-1-2022**	**3-31-2022**	1.9515	1.9515
		Highest	2.5674	2.5674

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4782	6.0000e-005	6.7600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Energy	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	208.0375	208.0375	0.0188	4.2500e-003	209.7735
Mobile	0.4970	3.9647	11.0801	0.0556	5.1346	0.0501	5.1847	1.3692	0.0470	1.4162	0.0000	5,128.1947	5,128.1947	0.0748	0.0000	5,130.0635
Waste						0.0000	0.0000		0.0000	0.0000	63.1525	0.0000	63.1525	3.7322	0.0000	156.4577
Water						0.0000	0.0000		0.0000	0.0000	24.2816	54.4768	78.7584	2.4994	0.0600	159.1278
Total	**1.9777**	**3.9873**	**11.1058**	**0.0558**	**5.1346**	**0.0518**	**5.1864**	**1.3692**	**0.0488**	**1.4180**	**87.4341**	**5,390.7222**	**5,478.1563**	**6.3252**	**0.0643**	**5,655.4364**

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	1.4782	6.0000e-005	6.7600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Energy	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	18.2979	18.2979	3.5000e-004	3.4000e-004	18.4066
Mobile	0.4970	3.9647	11.0801	0.0556	5.1346	0.0501	5.1847	1.3692	0.0470	1.4162	0.0000	5,128.1947	5,128.1947	0.0748	0.0000	5,130.0635
Waste						0.0000	0.0000		0.0000	0.0000	63.1525	0.0000	63.1525	3.7322	0.0000	156.4577
Water						0.0000	0.0000		0.0000	0.0000	24.2816	54.4768	78.7584	2.4994	0.0600	159.1278
Total	**1.9770**	**3.9816**	**11.1009**	**0.0557**	**5.1346**	**0.0514**	**5.1860**	**1.3692**	**0.0483**	**1.4175**	**87.4341**	**5,200.9825**	**5,288.4166**	**6.3067**	**0.0604**	**5,464.0696**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.03**	**0.14**	**0.04**	**0.07**	**0.00**	**0.83**	**0.01**	**0.00**	**0.88**	**0.03**	**0.00**	**3.52**	**3.46**	**0.29**	**6.08**	**3.38**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2021	1/21/2021	5	15	
2	Site Preparation	Site Preparation	1/22/2021	2/4/2021	5	10	
3	Grading	Grading	2/5/2021	3/8/2021	5	22	
4	Building Construction	Building Construction	3/9/2021	1/10/2022	5	220	
5	Paving	Paving	1/11/2022	2/2/2022	5	17	
6	Architectural Coating	Architectural Coating	2/3/2022	2/25/2022	5	17	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 9.22

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 496,461; Non-Residential Outdoor: 165,487; Striped Parking Area: 24,087 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

North Richmond Warehouse - Scenario 4 - 2021 - Contra Costa County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	2	8.00	81	0.73
Demolition	Excavators	6	8.00	158	0.38
Demolition	Rubber Tired Dozers	4	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	6	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	8	8.00	97	0.37
Grading	Excavators	4	8.00	158	0.38
Grading	Graders	2	8.00	187	0.41
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	4	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Cranes	2	7.00	231	0.29
Building Construction	Forklifts	6	8.00	89	0.20
Building Construction	Generator Sets	2	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	6	7.00	97	0.37
Building Construction	Welders	2	8.00	46	0.45
Paving	Pavers	4	8.00	130	0.42
Paving	Paving Equipment	4	8.00	132	0.36
Paving	Rollers	4	8.00	80	0.38
Architectural Coating	Air Compressors	2	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	12	15.00	0.00	60.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	14	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	16	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	18	308.00	120.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	12	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	2	62.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.5000e-003	0.0000	6.5000e-003	9.8000e-004	0.0000	9.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0012	51.0012	0.0144	0.0000	51.3601
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**6.5000e-003**	**0.0233**	**0.0298**	**9.8000e-004**	**0.0216**	**0.0226**	**0.0000**	**51.0012**	**51.0012**	**0.0144**	**0.0000**	**51.3601**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3000e-004	8.0300e-003	1.5900e-003	2.0000e-005	5.1000e-004	3.0000e-005	5.3000e-004	1.4000e-004	2.0000e-005	1.6000e-004	0.0000	2.2468	2.2468	1.0000e-004	0.0000	2.2492
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.5800e-003	1.0000e-005	8.9000e-004	1.0000e-005	9.0000e-004	2.4000e-004	1.0000e-005	2.4000e-004	0.0000	0.7550	0.7550	2.0000e-005	0.0000	0.7554
Total	**5.8000e-004**	**8.2700e-003**	**4.1700e-003**	**3.0000e-005**	**1.4000e-003**	**4.0000e-005**	**1.4300e-003**	**3.8000e-004**	**3.0000e-005**	**4.0000e-004**	**0.0000**	**3.0018**	**3.0018**	**1.2000e-004**	**0.0000**	**3.0047**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.5000e-003	0.0000	6.5000e-003	9.8000e-004	0.0000	9.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0011	51.0011	0.0144	0.0000	51.3600
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**6.5000e-003**	**0.0233**	**0.0298**	**9.8000e-004**	**0.0216**	**0.0226**	**0.0000**	**51.0011**	**51.0011**	**0.0144**	**0.0000**	**51.3600**

3.2 Demolition - 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	2.3000e-004	8.0300e-003	1.5900e-003	2.0000e-005	5.1000e-004	3.0000e-005	5.3000e-004	1.4000e-004	2.0000e-005	1.6000e-004	0.0000	2.2468	2.2468	1.0000e-004	0.0000	2.2492
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.5800e-003	1.0000e-005	8.9000e-004	1.0000e-005	9.0000e-004	2.4000e-004	1.0000e-005	2.4000e-004	0.0000	0.7550	0.7550	2.0000e-005	0.0000	0.7554
Total	**5.8000e-004**	**8.2700e-003**	**4.1700e-003**	**3.0000e-005**	**1.4000e-003**	**4.0000e-005**	**1.4300e-003**	**3.8000e-004**	**3.0000e-005**	**4.0000e-004**	**0.0000**	**3.0018**	**3.0018**	**1.2000e-004**	**0.0000**	**3.0047**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.9000e-004	2.0600e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6040	0.6040	1.0000e-005	0.0000	0.6044
Total	**2.8000e-004**	**1.9000e-004**	**2.0600e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6040**	**0.6040**	**1.0000e-005**	**0.0000**	**0.6044**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7060
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7060**

3.3 Site Preparation - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.9000e-004	2.0600e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6040	0.6040	1.0000e-005	0.0000	0.6044
Total	**2.8000e-004**	**1.9000e-004**	**2.0600e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6040**	**0.6040**	**1.0000e-005**	**0.0000**	**0.6044**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1921	0.0000	0.1921	0.0793	0.0000	0.0793	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0922	1.0208	0.6793	1.3600e-003		0.0437	0.0437		0.0402	0.0402	0.0000	119.8890	119.8890	0.0388	0.0000	120.8583
Total	**0.0922**	**1.0208**	**0.6793**	**1.3600e-003**	**0.1921**	**0.0437**	**0.2358**	**0.0793**	**0.0402**	**0.1195**	**0.0000**	**119.8890**	**119.8890**	**0.0388**	**0.0000**	**120.8583**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.8000e-004	5.0400e-003	2.0000e-005	1.7400e-003	1.0000e-005	1.7600e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.4765	1.4765	3.0000e-005	0.0000	1.4773
Total	**6.8000e-004**	**4.8000e-004**	**5.0400e-003**	**2.0000e-005**	**1.7400e-003**	**1.0000e-005**	**1.7600e-003**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**0.0000**	**1.4765**	**1.4765**	**3.0000e-005**	**0.0000**	**1.4773**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1921	0.0000	0.1921	0.0793	0.0000	0.0793	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0922	1.0208	0.6793	1.3600e-003		0.0437	0.0437		0.0402	0.0402	0.0000	119.8888	119.8888	0.0388	0.0000	120.8582
Total	**0.0922**	**1.0208**	**0.6793**	**1.3600e-003**	**0.1921**	**0.0437**	**0.2358**	**0.0793**	**0.0402**	**0.1195**	**0.0000**	**119.8888**	**119.8888**	**0.0388**	**0.0000**	**120.8582**

3.4 Grading - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.8000e-004	5.0400e-003	2.0000e-005	1.7400e-003	1.0000e-005	1.7600e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.4765	1.4765	3.0000e-005	0.0000	1.4773
Total	**6.8000e-004**	**4.8000e-004**	**5.0400e-003**	**2.0000e-005**	**1.7400e-003**	**1.0000e-005**	**1.7600e-003**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**0.0000**	**1.4765**	**1.4765**	**3.0000e-005**	**0.0000**	**1.4773**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4068	3.7305	3.5471	5.7600e-003		0.2051	0.2051		0.1929	0.1929	0.0000	495.7038	495.7038	0.1196	0.0000	498.6936
Total	**0.4068**	**3.7305**	**3.5471**	**5.7600e-003**		**0.2051**	**0.2051**		**0.1929**	**0.1929**	**0.0000**	**495.7038**	**495.7038**	**0.1196**	**0.0000**	**498.6936**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0420	1.3272	0.3372	3.4700e-003	0.0845	2.9800e-003	0.0874	0.0244	2.8500e-003	0.0273	0.0000	331.9198	331.9198	0.0154	0.0000	332.3051
Worker	0.1021	0.0713	0.7547	2.4500e-003	0.2614	1.7000e-003	0.2631	0.0695	1.5600e-003	0.0711	0.0000	221.1756	221.1756	5.0300e-003	0.0000	221.3013
Total	**0.1441**	**1.3985**	**1.0919**	**5.9200e-003**	**0.3458**	**4.6800e-003**	**0.3505**	**0.0939**	**4.4100e-003**	**0.0983**	**0.0000**	**553.0955**	**553.0955**	**0.0204**	**0.0000**	**553.6064**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4068	3.7305	3.5471	5.7600e-003		0.2051	0.2051		0.1929	0.1929	0.0000	495.7032	495.7032	0.1196	0.0000	498.6930
Total	**0.4068**	**3.7305**	**3.5471**	**5.7600e-003**		**0.2051**	**0.2051**		**0.1929**	**0.1929**	**0.0000**	**495.7032**	**495.7032**	**0.1196**	**0.0000**	**498.6930**

3.5 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0420	1.3272	0.3372	3.4700e-003	0.0845	2.9800e-003	0.0874	0.0244	2.8500e-003	0.0273	0.0000	331.9198	331.9198	0.0154	0.0000	332.3051
Worker	0.1021	0.0713	0.7547	2.4500e-003	0.2614	1.7000e-003	0.2631	0.0695	1.5600e-003	0.0711	0.0000	221.1756	221.1756	5.0300e-003	0.0000	221.3013
Total	**0.1441**	**1.3985**	**1.0919**	**5.9200e-003**	**0.3458**	**4.6800e-003**	**0.3505**	**0.0939**	**4.4100e-003**	**0.0983**	**0.0000**	**553.0955**	**553.0955**	**0.0204**	**0.0000**	**553.6064**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0102	0.0937	0.0982	1.6000e-004		4.8500e-003	4.8500e-003		4.5700e-003	4.5700e-003	0.0000	13.9035	13.9035	3.3300e-003	0.0000	13.9868
Total	**0.0102**	**0.0937**	**0.0982**	**1.6000e-004**		**4.8500e-003**	**4.8500e-003**		**4.5700e-003**	**4.5700e-003**	**0.0000**	**13.9035**	**13.9035**	**3.3300e-003**	**0.0000**	**13.9868**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-003	0.0352	8.8700e-003	1.0000e-004	2.3700e-003	7.0000e-005	2.4400e-003	6.8000e-004	7.0000e-005	7.5000e-004	0.0000	9.2180	9.2180	4.1000e-004	0.0000	9.2282
Worker	2.6600e-003	1.7900e-003	0.0194	7.0000e-005	7.3300e-003	5.0000e-005	7.3700e-003	1.9500e-003	4.0000e-005	1.9900e-003	0.0000	5.9709	5.9709	1.3000e-004	0.0000	5.9741
Total	**3.7600e-003**	**0.0369**	**0.0283**	**1.7000e-004**	**9.7000e-003**	**1.2000e-004**	**9.8100e-003**	**2.6300e-003**	**1.1000e-004**	**2.7400e-003**	**0.0000**	**15.1889**	**15.1889**	**5.4000e-004**	**0.0000**	**15.2023**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0102	0.0937	0.0982	1.6000e-004		4.8500e-003	4.8500e-003		4.5700e-003	4.5700e-003	0.0000	13.9035	13.9035	3.3300e-003	0.0000	13.9868
Total	**0.0102**	**0.0937**	**0.0982**	**1.6000e-004**		**4.8500e-003**	**4.8500e-003**		**4.5700e-003**	**4.5700e-003**	**0.0000**	**13.9035**	**13.9035**	**3.3300e-003**	**0.0000**	**13.9868**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-003	0.0352	8.8700e-003	1.0000e-004	2.3700e-003	7.0000e-005	2.4400e-003	6.8000e-004	7.0000e-005	7.5000e-004	0.0000	9.2180	9.2180	4.1000e-004	0.0000	9.2282
Worker	2.6600e-003	1.7900e-003	0.0194	7.0000e-005	7.3300e-003	5.0000e-005	7.3700e-003	1.9500e-003	4.0000e-005	1.9900e-003	0.0000	5.9709	5.9709	1.3000e-004	0.0000	5.9741
Total	**3.7600e-003**	**0.0369**	**0.0283**	**1.7000e-004**	**9.7000e-003**	**1.2000e-004**	**9.8100e-003**	**2.6300e-003**	**1.1000e-004**	**2.7400e-003**	**0.0000**	**15.1889**	**15.1889**	**5.4000e-004**	**0.0000**	**15.2023**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0188	0.1891	0.2479	3.9000e-004		9.6500e-003	9.6500e-003		8.8800e-003	8.8800e-003	0.0000	34.0469	34.0469	0.0110	0.0000	34.3221
Paving	0.0121					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0308**	**0.1891**	**0.2479**	**3.9000e-004**		**9.6500e-003**	**9.6500e-003**		**8.8800e-003**	**8.8800e-003**	**0.0000**	**34.0469**	**34.0469**	**0.0110**	**0.0000**	**34.3221**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.5000e-004	2.6800e-003	1.0000e-005	1.0100e-003	1.0000e-005	1.0200e-003	2.7000e-004	1.0000e-005	2.7000e-004	0.0000	0.8239	0.8239	2.0000e-005	0.0000	0.8244
Total	**3.7000e-004**	**2.5000e-004**	**2.6800e-003**	**1.0000e-005**	**1.0100e-003**	**1.0000e-005**	**1.0200e-003**	**2.7000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.8239**	**0.8239**	**2.0000e-005**	**0.0000**	**0.8244**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0188	0.1891	0.2479	3.9000e-004		9.6500e-003	9.6500e-003		8.8800e-003	8.8800e-003	0.0000	34.0468	34.0468	0.0110	0.0000	34.3221
Paving	0.0121					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0308**	**0.1891**	**0.2479**	**3.9000e-004**		**9.6500e-003**	**9.6500e-003**		**8.8800e-003**	**8.8800e-003**	**0.0000**	**34.0468**	**34.0468**	**0.0110**	**0.0000**	**34.3221**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.5000e-004	2.6800e-003	1.0000e-005	1.0100e-003	1.0000e-005	1.0200e-003	2.7000e-004	1.0000e-005	2.7000e-004	0.0000	0.8239	0.8239	2.0000e-005	0.0000	0.8244
Total	**3.7000e-004**	**2.5000e-004**	**2.6800e-003**	**1.0000e-005**	**1.0100e-003**	**1.0000e-005**	**1.0200e-003**	**2.7000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.8239**	**0.8239**	**2.0000e-005**	**0.0000**	**0.8244**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5899					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4800e-003	0.0239	0.0308	5.0000e-005		1.3900e-003	1.3900e-003		1.3900e-003	1.3900e-003	0.0000	4.3405	4.3405	2.8000e-004	0.0000	4.3476
Total	**1.5934**	**0.0239**	**0.0308**	**5.0000e-005**		**1.3900e-003**	**1.3900e-003**		**1.3900e-003**	**1.3900e-003**	**0.0000**	**4.3405**	**4.3405**	**2.8000e-004**	**0.0000**	**4.3476**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.0200e-003	0.0111	4.0000e-005	4.1800e-003	3.0000e-005	4.2100e-003	1.1100e-003	2.0000e-005	1.1400e-003	0.0000	3.4055	3.4055	7.0000e-005	0.0000	3.4073
Total	**1.5200e-003**	**1.0200e-003**	**0.0111**	**4.0000e-005**	**4.1800e-003**	**3.0000e-005**	**4.2100e-003**	**1.1100e-003**	**2.0000e-005**	**1.1400e-003**	**0.0000**	**3.4055**	**3.4055**	**7.0000e-005**	**0.0000**	**3.4073**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5899					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4800e-003	0.0239	0.0308	5.0000e-005		1.3900e-003	1.3900e-003		1.3900e-003	1.3900e-003	0.0000	4.3405	4.3405	2.8000e-004	0.0000	4.3476
Total	**1.5934**	**0.0239**	**0.0308**	**5.0000e-005**		**1.3900e-003**	**1.3900e-003**		**1.3900e-003**	**1.3900e-003**	**0.0000**	**4.3405**	**4.3405**	**2.8000e-004**	**0.0000**	**4.3476**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.0200e-003	0.0111	4.0000e-005	4.1800e-003	3.0000e-005	4.2100e-003	1.1100e-003	2.0000e-005	1.1400e-003	0.0000	3.4055	3.4055	7.0000e-005	0.0000	3.4073
Total	**1.5200e-003**	**1.0200e-003**	**0.0111**	**4.0000e-005**	**4.1800e-003**	**3.0000e-005**	**4.2100e-003**	**1.1100e-003**	**2.0000e-005**	**1.1400e-003**	**0.0000**	**3.4055**	**3.4055**	**7.0000e-005**	**0.0000**	**3.4073**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4970	3.9647	11.0801	0.0556	5.1346	0.0501	5.1847	1.3692	0.0470	1.4162	0.0000	5,128.1947	5,128.1947	0.0748	0.0000	5,130.0635
Unmitigated	0.4970	3.9647	11.0801	0.0556	5.1346	0.0501	5.1847	1.3692	0.0470	1.4162	0.0000	5,128.1947	5,128.1947	0.0748	0.0000	5,130.0635

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,919.63	1,919.63	1919.63	13,822,079	13,822,079
Total	1,919.63	1,919.63	1,919.63	13,822,079	13,822,079

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	21.21	21.21	21.21	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.582298	0.039109	0.186022	0.123408	0.017184	0.005083	0.010615	0.023794	0.001605	0.001810	0.005454	0.002746	0.000871
Unrefrigerated Warehouse-No Rail	0.697900	0.000000	0.000000	0.218800	0.000000	0.000000	0.000000	0.083300	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	183.4873	183.4873	0.0184	3.8000e-003	185.0773
NaturalGas Mitigated	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	18.2979	18.2979	3.5000e-004	3.4000e-004	18.4066
NaturalGas Unmitigated	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5502	24.5502	4.7000e-004	4.5000e-004	24.6961

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	460054	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5502	24.5502	4.7000e-004	4.5000e-004	24.6961
Total		**2.4800e-003**	**0.0226**	**0.0189**	**1.4000e-004**		**1.7100e-003**	**1.7100e-003**		**1.7100e-003**	**1.7100e-003**	**0.0000**	**24.5502**	**24.5502**	**4.7000e-004**	**4.5000e-004**	**24.6961**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	342889	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	18.2979	18.2979	3.5000e-004	3.4000e-004	18.4066
Total		**1.8500e-003**	**0.0168**	**0.0141**	**1.0000e-004**		**1.2800e-003**	**1.2800e-003**		**1.2800e-003**	**1.2800e-003**	**0.0000**	**18.2979**	**18.2979**	**3.5000e-004**	**3.4000e-004**	**18.4066**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	140506	18.4824	1.8500e-003	3.8000e-004	18.6426
Unrefrigerated Warehouse-No Rail	1.25439e+006	165.0049	0.0165	3.4100e-003	166.4348
Total		**183.4873**	**0.0184**	**3.7900e-003**	**185.0773**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.4782	6.0000e-005	6.7600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Unmitigated	1.4782	6.0000e-005	6.7600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140

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	0.1590					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3186					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.3000e-004	6.0000e-005	6.7600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Total	**1.4782**	**6.0000e-005**	**6.7600e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0131**	**0.0131**	**3.0000e-005**	**0.0000**	**0.0140**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1590					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3186					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.3000e-004	6.0000e-005	6.7600e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Total	**1.4782**	**6.0000e-005**	**6.7600e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0131**	**0.0131**	**3.0000e-005**	**0.0000**	**0.0140**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	78.7584	2.4994	0.0600	159.1278
Unmitigated	78.7584	2.4994	0.0600	159.1278

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	76.5368 / 0	78.7584	2.4994	0.0600	159.1278
Total		**78.7584**	**2.4994**	**0.0600**	**159.1278**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	76.5368 / 0	78.7584	2.4994	0.0600	159.1278
Total		**78.7584**	**2.4994**	**0.0600**	**159.1278**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	63.1525	3.7322	0.0000	156.4577
Unmitigated	63.1525	3.7322	0.0000	156.4577

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	311.11	63.1525	3.7322	0.0000	156.4577
Total		**63.1525**	**3.7322**	**0.0000**	**156.4577**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	311.11	63.1525	3.7322	0.0000	156.4577
Total		**63.1525**	**3.7322**	**0.0000**	**156.4577**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

North Richmond Warehouse - Scenario 4 - 2023

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	330.97	1000sqft	20.18	330,974.00	0
Parking Lot	401.45	1000sqft	9.22	401,446.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	5			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

North Richmond Warehouse - Scenario 4 - 2023 - Contra Costa County, Annual

Project Characteristics - This file is for operational emissions only. Not valid for construction. CO2 intensity factor from PG&E 2015.

Land Use - Quantities from 2/20/20 site plan.

Construction Phase - Construction schedule per Anderson pers. comm.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Demolition - Demoilition building square feet per Project Description.

Architectural Coating - VOC content per BAAQMD Regulation 8.

Vehicle Trips - Trip generation rate of 5.80 / KSF from Fehr & Peer 2020 and 2/20/20 site plan. Trip length per Fehr & Peers 2020. Apply seven days per week.

Vehicle Emission Factors - MDV and HHD rates are specific for this scenario and year.

Vehicle Emission Factors - MDV and HHD rates are specific for this scenario and year.

Vehicle Emission Factors - MDV and HHD rates are specific for this scenario and year.

Area Coating - VOC content per BAAQMD Regulation 8.

Energy Use -

Energy Mitigation - Title 24 2019 Standards per California Energy Commission 2018, and on-site photovoltaic electricity generation for 100% of building load.

Fleet Mix - 69.79% LDA, 21.88% MDV, 8.33% HHD from Fehr & Peers 2020.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	100.00
tblArchitecturalCoating	EF_Parking	150.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	150.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	100
tblAreaCoating	Area_EF_Parking	150	100
tblAreaCoating	Area_EF_Residential_Exterior	150	100

tblConstructionPhase	NumDays	30.00	15.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	45.00	22.00
tblConstructionPhase	NumDays	440.00	220.00
tblConstructionPhase	NumDays	35.00	17.00
tblConstructionPhase	NumDays	35.00	17.00
tblFleetMix	HHD	0.02	0.08
tblFleetMix	LDA	0.59	0.70
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.19	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.0130e-003	0.00
tblFleetMix	MCY	5.3510e-003	0.00
tblFleetMix	MDV	0.12	0.22
tblFleetMix	MH	8.0200e-004	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	1.6350e-003	0.00
tblFleetMix	SBUS	2.7260e-003	0.00
tblFleetMix	UBUS	1.7420e-003	0.00
tblGrading	AcresOfGrading	110.00	112.50
tblLandUse	LandUseSquareFeet	330,970.00	330,974.00
tblLandUse	LandUseSquareFeet	401,450.00	401,446.00
tblLandUse	LotAcreage	7.60	20.18
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	WorkerTripNumber	30.00	15.00
tblTripsAndVMT	WorkerTripNumber	35.00	18.00
tblTripsAndVMT	WorkerTripNumber	40.00	20.00
tblTripsAndVMT	WorkerTripNumber	30.00	15.00
tblVehicleEF	HHD	0.42	0.02
tblVehicleEF	HHD	0.04	9.0800e-004
tblVehicleEF	HHD	0.09	0.00
tblVehicleEF	HHD	1.61	7.26
tblVehicleEF	HHD	0.83	0.21
tblVehicleEF	HHD	2.94	0.00
tblVehicleEF	HHD	4,403.05	1,132.47

tblVehicleEF	HHD	1,548.59	1,286.21
tblVehicleEF	HHD	8.87	0.00
tblVehicleEF	HHD	14.21	5.81
tblVehicleEF	HHD	1.96	2.05
tblVehicleEF	HHD	19.76	2.41
tblVehicleEF	HHD	8.9050e-003	2.0910e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	6.2570e-003	0.02
tblVehicleEF	HHD	9.7000e-005	0.00
tblVehicleEF	HHD	8.5190e-003	2.0010e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8090e-003	8.8750e-003
tblVehicleEF	HHD	5.9860e-003	0.02
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	8.2000e-005	0.00
tblVehicleEF	HHD	4.5240e-003	0.00
tblVehicleEF	HHD	0.42	0.49
tblVehicleEF	HHD	5.4000e-005	0.00
tblVehicleEF	HHD	0.09	0.02
tblVehicleEF	HHD	3.7700e-004	0.00
tblVehicleEF	HHD	0.08	0.00
tblVehicleEF	HHD	0.04	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	1.3700e-004	0.00
tblVehicleEF	HHD	8.2000e-005	0.00
tblVehicleEF	HHD	4.5240e-003	0.00

tblVehicleEF	HHD	0.49	0.56
tblVehicleEF	HHD	5.4000e-005	0.00
tblVehicleEF	HHD	0.14	0.02
tblVehicleEF	HHD	3.7700e-004	0.00
tblVehicleEF	HHD	0.09	0.00
tblVehicleEF	HHD	0.40	0.02
tblVehicleEF	HHD	0.04	9.0800e-004
tblVehicleEF	HHD	0.09	0.00
tblVehicleEF	HHD	1.17	7.17
tblVehicleEF	HHD	0.84	0.21
tblVehicleEF	HHD	2.67	0.00
tblVehicleEF	HHD	4,664.64	1,117.60
tblVehicleEF	HHD	1,548.59	1,286.21
tblVehicleEF	HHD	8.87	0.00
tblVehicleEF	HHD	14.67	5.52
tblVehicleEF	HHD	1.89	1.97
tblVehicleEF	HHD	19.75	2.41
tblVehicleEF	HHD	7.5070e-003	1.8580e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	6.2570e-003	0.02
tblVehicleEF	HHD	9.7000e-005	0.00
tblVehicleEF	HHD	7.1820e-003	1.7780e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8090e-003	8.8750e-003
tblVehicleEF	HHD	5.9860e-003	0.02
tblVehicleEF	HHD	8.9000e-005	0.00

tblVehicleEF	HHD	2.2100e-004	0.00
tblVehicleEF	HHD	5.0360e-003	0.00
tblVehicleEF	HHD	0.40	0.52
tblVehicleEF	HHD	1.3800e-004	0.00
tblVehicleEF	HHD	0.09	0.02
tblVehicleEF	HHD	3.7200e-004	0.00
tblVehicleEF	HHD	0.08	0.00
tblVehicleEF	HHD	0.04	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	1.3300e-004	0.00
tblVehicleEF	HHD	2.2100e-004	0.00
tblVehicleEF	HHD	5.0360e-003	0.00
tblVehicleEF	HHD	0.46	0.59
tblVehicleEF	HHD	1.3800e-004	0.00
tblVehicleEF	HHD	0.14	0.02
tblVehicleEF	HHD	3.7200e-004	0.00
tblVehicleEF	HHD	0.08	0.00
tblVehicleEF	HHD	0.46	0.02
tblVehicleEF	HHD	0.04	9.0800e-004
tblVehicleEF	HHD	0.10	0.00
tblVehicleEF	HHD	2.22	7.39
tblVehicleEF	HHD	0.83	0.21
tblVehicleEF	HHD	3.19	0.00
tblVehicleEF	HHD	4,041.81	1,153.00
tblVehicleEF	HHD	1,548.59	1,286.21
tblVehicleEF	HHD	8.87	0.00
tblVehicleEF	HHD	13.58	6.21

tblVehicleEF	HHD	1.99	2.08
tblVehicleEF	HHD	19.78	2.41
tblVehicleEF	HHD	0.01	2.4130e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	6.2570e-003	0.02
tblVehicleEF	HHD	9.7000e-005	0.00
tblVehicleEF	HHD	0.01	2.3090e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8090e-003	8.8750e-003
tblVehicleEF	HHD	5.9860e-003	0.02
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	3.0000e-005	0.00
tblVehicleEF	HHD	4.7590e-003	0.00
tblVehicleEF	HHD	0.45	0.45
tblVehicleEF	HHD	2.2000e-005	0.00
tblVehicleEF	HHD	0.09	0.02
tblVehicleEF	HHD	4.1600e-004	0.00
tblVehicleEF	HHD	0.09	0.00
tblVehicleEF	HHD	0.04	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	1.4100e-004	0.00
tblVehicleEF	HHD	3.0000e-005	0.00
tblVehicleEF	HHD	4.7590e-003	0.00
tblVehicleEF	HHD	0.53	0.51
tblVehicleEF	HHD	2.2000e-005	0.00
tblVehicleEF	HHD	0.14	0.02

tblVehicleEF	HHD	4.1600e-004	0.00
tblVehicleEF	HHD	0.09	0.00
tblVehicleEF	MDV	9.5600e-003	3.3460e-003
tblVehicleEF	MDV	0.02	5.8550e-003
tblVehicleEF	MDV	1.06	0.37
tblVehicleEF	MDV	2.97	1.04
tblVehicleEF	MDV	460.03	161.01
tblVehicleEF	MDV	104.52	36.58
tblVehicleEF	MDV	0.13	0.05
tblVehicleEF	MDV	0.27	0.09
tblVehicleEF	MDV	1.7650e-003	6.1800e-004
tblVehicleEF	MDV	2.4290e-003	8.5000e-004
tblVehicleEF	MDV	1.6260e-003	5.6900e-004
tblVehicleEF	MDV	2.2340e-003	7.8200e-004
tblVehicleEF	MDV	0.06	0.02
tblVehicleEF	MDV	0.18	0.07
tblVehicleEF	MDV	0.07	0.02
tblVehicleEF	MDV	0.02	8.3720e-003
tblVehicleEF	MDV	0.10	0.04
tblVehicleEF	MDV	0.23	0.08
tblVehicleEF	MDV	4.6060e-003	1.6120e-003
tblVehicleEF	MDV	1.0970e-003	3.8400e-004
tblVehicleEF	MDV	0.06	0.02
tblVehicleEF	MDV	0.18	0.07
tblVehicleEF	MDV	0.07	0.02
tblVehicleEF	MDV	0.03	0.01
tblVehicleEF	MDV	0.10	0.04

tblVehicleEF	MDV	0.25	0.09
tblVehicleEF	MDV	0.01	3.7850e-003
tblVehicleEF	MDV	0.01	4.7120e-003
tblVehicleEF	MDV	1.28	0.45
tblVehicleEF	MDV	2.28	0.80
tblVehicleEF	MDV	500.91	175.32
tblVehicleEF	MDV	104.52	36.58
tblVehicleEF	MDV	0.12	0.04
tblVehicleEF	MDV	0.23	0.08
tblVehicleEF	MDV	1.7650e-003	6.1800e-004
tblVehicleEF	MDV	2.4290e-003	8.5000e-004
tblVehicleEF	MDV	1.6260e-003	5.6900e-004
tblVehicleEF	MDV	2.2340e-003	7.8200e-004
tblVehicleEF	MDV	0.16	0.06
tblVehicleEF	MDV	0.21	0.08
tblVehicleEF	MDV	0.15	0.05
tblVehicleEF	MDV	0.03	9.4610e-003
tblVehicleEF	MDV	0.10	0.03
tblVehicleEF	MDV	0.18	0.06
tblVehicleEF	MDV	5.0170e-003	1.7560e-003
tblVehicleEF	MDV	1.0850e-003	3.8000e-004
tblVehicleEF	MDV	0.16	0.06
tblVehicleEF	MDV	0.21	0.08
tblVehicleEF	MDV	0.15	0.05
tblVehicleEF	MDV	0.04	0.01
tblVehicleEF	MDV	0.10	0.03
tblVehicleEF	MDV	0.20	0.07

tblVehicleEF	MDV	9.3050e-003	3.2570e-003
tblVehicleEF	MDV	0.02	6.7010e-003
tblVehicleEF	MDV	1.04	0.37
tblVehicleEF	MDV	3.54	1.24
tblVehicleEF	MDV	454.42	159.05
tblVehicleEF	MDV	104.52	36.58
tblVehicleEF	MDV	0.15	0.05
tblVehicleEF	MDV	0.29	0.10
tblVehicleEF	MDV	1.7650e-003	6.1800e-004
tblVehicleEF	MDV	2.4290e-003	8.5000e-004
tblVehicleEF	MDV	1.6260e-003	5.6900e-004
tblVehicleEF	MDV	2.2340e-003	7.8200e-004
tblVehicleEF	MDV	0.02	8.4350e-003
tblVehicleEF	MDV	0.19	0.07
tblVehicleEF	MDV	0.03	0.01
tblVehicleEF	MDV	0.02	8.1540e-003
tblVehicleEF	MDV	0.12	0.04
tblVehicleEF	MDV	0.26	0.09
tblVehicleEF	MDV	4.5490e-003	1.5920e-003
tblVehicleEF	MDV	1.1070e-003	3.8700e-004
tblVehicleEF	MDV	0.02	8.4350e-003
tblVehicleEF	MDV	0.19	0.07
tblVehicleEF	MDV	0.03	0.01
tblVehicleEF	MDV	0.03	0.01
tblVehicleEF	MDV	0.12	0.04
tblVehicleEF	MDV	0.28	0.10
tblVehicleTrips	CC_TL	7.30	21.21

tblVehicleTrips	CNW_TL	7.30	21.21
tblVehicleTrips	CW_TL	9.50	21.21
tblVehicleTrips	ST_TR	1.68	5.80
tblVehicleTrips	SU_TR	1.68	5.80
tblVehicleTrips	WD_TR	1.68	5.80

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.7310	7.0353	5.8646	0.0141	0.7290	0.2973	1.0262	0.2745	0.2779	0.5525	0.0000	1,258.2074	1,258.2074	0.2041	0.0000	1,263.3107
2022	1.6401	0.3450	0.4190	8.1000e-004	0.0149	0.0161	0.0309	4.0100e-003	0.0150	0.0190	0.0000	71.7092	71.7092	0.0153	0.0000	72.0905
Maximum	**1.6401**	**7.0353**	**5.8646**	**0.0141**	**0.7290**	**0.2973**	**1.0262**	**0.2745**	**0.2779**	**0.5525**	**0.0000**	**1,258.2074**	**1,258.2074**	**0.2041**	**0.0000**	**1,263.3107**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.7310	7.0353	5.8646	0.0141	0.7290	0.2973	1.0262	0.2745	0.2779	0.5525	0.0000	1,258.2065	1,258.2065	0.2041	0.0000	1,263.3099
2022	1.6401	0.3450	0.4190	8.1000e-004	0.0149	0.0161	0.0309	4.0100e-003	0.0150	0.0190	0.0000	71.7092	71.7092	0.0153	0.0000	72.0904
Maximum	**1.6401**	**7.0353**	**5.8646**	**0.0141**	**0.7290**	**0.2973**	**1.0262**	**0.2745**	**0.2779**	**0.5525**	**0.0000**	**1,258.2065**	**1,258.2065**	**0.2041**	**0.0000**	**1,263.3099**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2021**	**3-31-2021**	2.5674	2.5674
2	**4-1-2021**	**6-30-2021**	1.7211	1.7211
3	**7-1-2021**	**9-30-2021**	1.7400	1.7400
4	**10-1-2021**	**12-31-2021**	1.7492	1.7492
5	**1-1-2022**	**3-31-2022**	1.9515	1.9515
		Highest	2.5674	2.5674

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4782	6.0000e-005	6.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Energy	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	208.0375	208.0375	0.0188	4.2500e-003	209.7735
Mobile	0.3592	3.8119	8.1954	0.0474	5.1344	0.0482	5.1826	1.3691	0.0454	1.4145	0.0000	4,377.5385	4,377.5385	0.0510	0.0000	4,378.8121
Waste						0.0000	0.0000		0.0000	0.0000	63.1525	0.0000	63.1525	3.7322	0.0000	156.4577
Water						0.0000	0.0000		0.0000	0.0000	24.2816	54.4768	78.7584	2.4994	0.0600	159.1278
Total	**1.8399**	**3.8345**	**8.2211**	**0.0475**	**5.1344**	**0.0499**	**5.1844**	**1.3691**	**0.0471**	**1.4162**	**87.4341**	**4,640.0659**	**4,727.5000**	**6.3014**	**0.0643**	**4,904.1850**

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	1.4782	6.0000e-005	6.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Energy	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	18.2979	18.2979	3.5000e-004	3.4000e-004	18.4066
Mobile	0.3592	3.8119	8.1954	0.0474	5.1344	0.0482	5.1826	1.3691	0.0454	1.4145	0.0000	4,377.5385	4,377.5385	0.0510	0.0000	4,378.8121
Waste						0.0000	0.0000		0.0000	0.0000	63.1525	0.0000	63.1525	3.7322	0.0000	156.4577
Water						0.0000	0.0000		0.0000	0.0000	24.2816	54.4768	78.7584	2.4994	0.0600	159.1278
Total	**1.8393**	**3.8287**	**8.2163**	**0.0475**	**5.1344**	**0.0495**	**5.1839**	**1.3691**	**0.0467**	**1.4158**	**87.4341**	**4,450.3262**	**4,537.7604**	**6.2829**	**0.0604**	**4,712.8182**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.03**	**0.15**	**0.06**	**0.08**	**0.00**	**0.86**	**0.01**	**0.00**	**0.91**	**0.03**	**0.00**	**4.09**	**4.01**	**0.29**	**6.08**	**3.90**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2021	1/21/2021	5	15	
2	Site Preparation	Site Preparation	1/22/2021	2/4/2021	5	10	
3	Grading	Grading	2/5/2021	3/8/2021	5	22	
4	Building Construction	Building Construction	3/9/2021	1/10/2022	5	220	
5	Paving	Paving	1/11/2022	2/2/2022	5	17	
6	Architectural Coating	Architectural Coating	2/3/2022	2/25/2022	5	17	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 9.22

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 496,461; Non-Residential Outdoor: 165,487; Striped Parking Area: 24,087 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

North Richmond Warehouse - Scenario 4 - 2023 - Contra Costa County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	2	8.00	81	0.73
Demolition	Excavators	6	8.00	158	0.38
Demolition	Rubber Tired Dozers	4	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	6	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	8	8.00	97	0.37
Grading	Excavators	4	8.00	158	0.38
Grading	Graders	2	8.00	187	0.41
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	4	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Cranes	2	7.00	231	0.29
Building Construction	Forklifts	6	8.00	89	0.20
Building Construction	Generator Sets	2	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	6	7.00	97	0.37
Building Construction	Welders	2	8.00	46	0.45
Paving	Pavers	4	8.00	130	0.42
Paving	Paving Equipment	4	8.00	132	0.36
Paving	Rollers	4	8.00	80	0.38
Architectural Coating	Air Compressors	2	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	12	15.00	0.00	60.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	14	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	16	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	18	308.00	120.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	12	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	2	62.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.5000e-003	0.0000	6.5000e-003	9.8000e-004	0.0000	9.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0012	51.0012	0.0144	0.0000	51.3601
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**6.5000e-003**	**0.0233**	**0.0298**	**9.8000e-004**	**0.0216**	**0.0226**	**0.0000**	**51.0012**	**51.0012**	**0.0144**	**0.0000**	**51.3601**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3000e-004	8.0300e-003	1.5900e-003	2.0000e-005	5.1000e-004	3.0000e-005	5.3000e-004	1.4000e-004	2.0000e-005	1.6000e-004	0.0000	2.2468	2.2468	1.0000e-004	0.0000	2.2492
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.5800e-003	1.0000e-005	8.9000e-004	1.0000e-005	9.0000e-004	2.4000e-004	1.0000e-005	2.4000e-004	0.0000	0.7550	0.7550	2.0000e-005	0.0000	0.7554
Total	**5.8000e-004**	**8.2700e-003**	**4.1700e-003**	**3.0000e-005**	**1.4000e-003**	**4.0000e-005**	**1.4300e-003**	**3.8000e-004**	**3.0000e-005**	**4.0000e-004**	**0.0000**	**3.0018**	**3.0018**	**1.2000e-004**	**0.0000**	**3.0047**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.5000e-003	0.0000	6.5000e-003	9.8000e-004	0.0000	9.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0011	51.0011	0.0144	0.0000	51.3600
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**6.5000e-003**	**0.0233**	**0.0298**	**9.8000e-004**	**0.0216**	**0.0226**	**0.0000**	**51.0011**	**51.0011**	**0.0144**	**0.0000**	**51.3600**

3.2 Demolition - 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	2.3000e-004	8.0300e-003	1.5900e-003	2.0000e-005	5.1000e-004	3.0000e-005	5.3000e-004	1.4000e-004	2.0000e-005	1.6000e-004	0.0000	2.2468	2.2468	1.0000e-004	0.0000	2.2492
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.5800e-003	1.0000e-005	8.9000e-004	1.0000e-005	9.0000e-004	2.4000e-004	1.0000e-005	2.4000e-004	0.0000	0.7550	0.7550	2.0000e-005	0.0000	0.7554
Total	**5.8000e-004**	**8.2700e-003**	**4.1700e-003**	**3.0000e-005**	**1.4000e-003**	**4.0000e-005**	**1.4300e-003**	**3.8000e-004**	**3.0000e-005**	**4.0000e-004**	**0.0000**	**3.0018**	**3.0018**	**1.2000e-004**	**0.0000**	**3.0047**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.9000e-004	2.0600e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6040	0.6040	1.0000e-005	0.0000	0.6044
Total	**2.8000e-004**	**1.9000e-004**	**2.0600e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6040**	**0.6040**	**1.0000e-005**	**0.0000**	**0.6044**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7060
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7060**

3.3 Site Preparation - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.9000e-004	2.0600e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6040	0.6040	1.0000e-005	0.0000	0.6044
Total	**2.8000e-004**	**1.9000e-004**	**2.0600e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6040**	**0.6040**	**1.0000e-005**	**0.0000**	**0.6044**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1921	0.0000	0.1921	0.0793	0.0000	0.0793	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0922	1.0208	0.6793	1.3600e-003		0.0437	0.0437		0.0402	0.0402	0.0000	119.8890	119.8890	0.0388	0.0000	120.8583
Total	**0.0922**	**1.0208**	**0.6793**	**1.3600e-003**	**0.1921**	**0.0437**	**0.2358**	**0.0793**	**0.0402**	**0.1195**	**0.0000**	**119.8890**	**119.8890**	**0.0388**	**0.0000**	**120.8583**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.8000e-004	5.0400e-003	2.0000e-005	1.7400e-003	1.0000e-005	1.7600e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.4765	1.4765	3.0000e-005	0.0000	1.4773
Total	**6.8000e-004**	**4.8000e-004**	**5.0400e-003**	**2.0000e-005**	**1.7400e-003**	**1.0000e-005**	**1.7600e-003**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**0.0000**	**1.4765**	**1.4765**	**3.0000e-005**	**0.0000**	**1.4773**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1921	0.0000	0.1921	0.0793	0.0000	0.0793	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0922	1.0208	0.6793	1.3600e-003		0.0437	0.0437		0.0402	0.0402	0.0000	119.8888	119.8888	0.0388	0.0000	120.8582
Total	**0.0922**	**1.0208**	**0.6793**	**1.3600e-003**	**0.1921**	**0.0437**	**0.2358**	**0.0793**	**0.0402**	**0.1195**	**0.0000**	**119.8888**	**119.8888**	**0.0388**	**0.0000**	**120.8582**

3.4 Grading - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.8000e-004	5.0400e-003	2.0000e-005	1.7400e-003	1.0000e-005	1.7600e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.4765	1.4765	3.0000e-005	0.0000	1.4773
Total	**6.8000e-004**	**4.8000e-004**	**5.0400e-003**	**2.0000e-005**	**1.7400e-003**	**1.0000e-005**	**1.7600e-003**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**0.0000**	**1.4765**	**1.4765**	**3.0000e-005**	**0.0000**	**1.4773**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4068	3.7305	3.5471	5.7600e-003		0.2051	0.2051		0.1929	0.1929	0.0000	495.7038	495.7038	0.1196	0.0000	498.6936
Total	**0.4068**	**3.7305**	**3.5471**	**5.7600e-003**		**0.2051**	**0.2051**		**0.1929**	**0.1929**	**0.0000**	**495.7038**	**495.7038**	**0.1196**	**0.0000**	**498.6936**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0420	1.3272	0.3372	3.4700e-003	0.0845	2.9800e-003	0.0874	0.0244	2.8500e-003	0.0273	0.0000	331.9198	331.9198	0.0154	0.0000	332.3051
Worker	0.1021	0.0713	0.7547	2.4500e-003	0.2614	1.7000e-003	0.2631	0.0695	1.5600e-003	0.0711	0.0000	221.1756	221.1756	5.0300e-003	0.0000	221.3013
Total	**0.1441**	**1.3985**	**1.0919**	**5.9200e-003**	**0.3458**	**4.6800e-003**	**0.3505**	**0.0939**	**4.4100e-003**	**0.0983**	**0.0000**	**553.0955**	**553.0955**	**0.0204**	**0.0000**	**553.6064**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4068	3.7305	3.5471	5.7600e-003		0.2051	0.2051		0.1929	0.1929	0.0000	495.7032	495.7032	0.1196	0.0000	498.6930
Total	**0.4068**	**3.7305**	**3.5471**	**5.7600e-003**		**0.2051**	**0.2051**		**0.1929**	**0.1929**	**0.0000**	**495.7032**	**495.7032**	**0.1196**	**0.0000**	**498.6930**

3.5 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0420	1.3272	0.3372	3.4700e-003	0.0845	2.9800e-003	0.0874	0.0244	2.8500e-003	0.0273	0.0000	331.9198	331.9198	0.0154	0.0000	332.3051
Worker	0.1021	0.0713	0.7547	2.4500e-003	0.2614	1.7000e-003	0.2631	0.0695	1.5600e-003	0.0711	0.0000	221.1756	221.1756	5.0300e-003	0.0000	221.3013
Total	**0.1441**	**1.3985**	**1.0919**	**5.9200e-003**	**0.3458**	**4.6800e-003**	**0.3505**	**0.0939**	**4.4100e-003**	**0.0983**	**0.0000**	**553.0955**	**553.0955**	**0.0204**	**0.0000**	**553.6064**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0102	0.0937	0.0982	1.6000e-004		4.8500e-003	4.8500e-003		4.5700e-003	4.5700e-003	0.0000	13.9035	13.9035	3.3300e-003	0.0000	13.9868
Total	**0.0102**	**0.0937**	**0.0982**	**1.6000e-004**		**4.8500e-003**	**4.8500e-003**		**4.5700e-003**	**4.5700e-003**	**0.0000**	**13.9035**	**13.9035**	**3.3300e-003**	**0.0000**	**13.9868**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-003	0.0352	8.8700e-003	1.0000e-004	2.3700e-003	7.0000e-005	2.4400e-003	6.8000e-004	7.0000e-005	7.5000e-004	0.0000	9.2180	9.2180	4.1000e-004	0.0000	9.2282
Worker	2.6600e-003	1.7900e-003	0.0194	7.0000e-005	7.3300e-003	5.0000e-005	7.3700e-003	1.9500e-003	4.0000e-005	1.9900e-003	0.0000	5.9709	5.9709	1.3000e-004	0.0000	5.9741
Total	**3.7600e-003**	**0.0369**	**0.0283**	**1.7000e-004**	**9.7000e-003**	**1.2000e-004**	**9.8100e-003**	**2.6300e-003**	**1.1000e-004**	**2.7400e-003**	**0.0000**	**15.1889**	**15.1889**	**5.4000e-004**	**0.0000**	**15.2023**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0102	0.0937	0.0982	1.6000e-004		4.8500e-003	4.8500e-003		4.5700e-003	4.5700e-003	0.0000	13.9035	13.9035	3.3300e-003	0.0000	13.9868
Total	**0.0102**	**0.0937**	**0.0982**	**1.6000e-004**		**4.8500e-003**	**4.8500e-003**		**4.5700e-003**	**4.5700e-003**	**0.0000**	**13.9035**	**13.9035**	**3.3300e-003**	**0.0000**	**13.9868**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-003	0.0352	8.8700e-003	1.0000e-004	2.3700e-003	7.0000e-005	2.4400e-003	6.8000e-004	7.0000e-005	7.5000e-004	0.0000	9.2180	9.2180	4.1000e-004	0.0000	9.2282
Worker	2.6600e-003	1.7900e-003	0.0194	7.0000e-005	7.3300e-003	5.0000e-005	7.3700e-003	1.9500e-003	4.0000e-005	1.9900e-003	0.0000	5.9709	5.9709	1.3000e-004	0.0000	5.9741
Total	**3.7600e-003**	**0.0369**	**0.0283**	**1.7000e-004**	**9.7000e-003**	**1.2000e-004**	**9.8100e-003**	**2.6300e-003**	**1.1000e-004**	**2.7400e-003**	**0.0000**	**15.1889**	**15.1889**	**5.4000e-004**	**0.0000**	**15.2023**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0188	0.1891	0.2479	3.9000e-004		9.6500e-003	9.6500e-003		8.8800e-003	8.8800e-003	0.0000	34.0469	34.0469	0.0110	0.0000	34.3221
Paving	0.0121					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0308**	**0.1891**	**0.2479**	**3.9000e-004**		**9.6500e-003**	**9.6500e-003**		**8.8800e-003**	**8.8800e-003**	**0.0000**	**34.0469**	**34.0469**	**0.0110**	**0.0000**	**34.3221**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.5000e-004	2.6800e-003	1.0000e-005	1.0100e-003	1.0000e-005	1.0200e-003	2.7000e-004	1.0000e-005	2.7000e-004	0.0000	0.8239	0.8239	2.0000e-005	0.0000	0.8244
Total	**3.7000e-004**	**2.5000e-004**	**2.6800e-003**	**1.0000e-005**	**1.0100e-003**	**1.0000e-005**	**1.0200e-003**	**2.7000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.8239**	**0.8239**	**2.0000e-005**	**0.0000**	**0.8244**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0188	0.1891	0.2479	3.9000e-004		9.6500e-003	9.6500e-003		8.8800e-003	8.8800e-003	0.0000	34.0468	34.0468	0.0110	0.0000	34.3221
Paving	0.0121					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0308**	**0.1891**	**0.2479**	**3.9000e-004**		**9.6500e-003**	**9.6500e-003**		**8.8800e-003**	**8.8800e-003**	**0.0000**	**34.0468**	**34.0468**	**0.0110**	**0.0000**	**34.3221**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.5000e-004	2.6800e-003	1.0000e-005	1.0100e-003	1.0000e-005	1.0200e-003	2.7000e-004	1.0000e-005	2.7000e-004	0.0000	0.8239	0.8239	2.0000e-005	0.0000	0.8244
Total	**3.7000e-004**	**2.5000e-004**	**2.6800e-003**	**1.0000e-005**	**1.0100e-003**	**1.0000e-005**	**1.0200e-003**	**2.7000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.8239**	**0.8239**	**2.0000e-005**	**0.0000**	**0.8244**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5899					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4800e-003	0.0239	0.0308	5.0000e-005		1.3900e-003	1.3900e-003		1.3900e-003	1.3900e-003	0.0000	4.3405	4.3405	2.8000e-004	0.0000	4.3476
Total	**1.5934**	**0.0239**	**0.0308**	**5.0000e-005**		**1.3900e-003**	**1.3900e-003**		**1.3900e-003**	**1.3900e-003**	**0.0000**	**4.3405**	**4.3405**	**2.8000e-004**	**0.0000**	**4.3476**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.0200e-003	0.0111	4.0000e-005	4.1800e-003	3.0000e-005	4.2100e-003	1.1100e-003	2.0000e-005	1.1400e-003	0.0000	3.4055	3.4055	7.0000e-005	0.0000	3.4073
Total	**1.5200e-003**	**1.0200e-003**	**0.0111**	**4.0000e-005**	**4.1800e-003**	**3.0000e-005**	**4.2100e-003**	**1.1100e-003**	**2.0000e-005**	**1.1400e-003**	**0.0000**	**3.4055**	**3.4055**	**7.0000e-005**	**0.0000**	**3.4073**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5899					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4800e-003	0.0239	0.0308	5.0000e-005		1.3900e-003	1.3900e-003		1.3900e-003	1.3900e-003	0.0000	4.3405	4.3405	2.8000e-004	0.0000	4.3476
Total	**1.5934**	**0.0239**	**0.0308**	**5.0000e-005**		**1.3900e-003**	**1.3900e-003**		**1.3900e-003**	**1.3900e-003**	**0.0000**	**4.3405**	**4.3405**	**2.8000e-004**	**0.0000**	**4.3476**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.0200e-003	0.0111	4.0000e-005	4.1800e-003	3.0000e-005	4.2100e-003	1.1100e-003	2.0000e-005	1.1400e-003	0.0000	3.4055	3.4055	7.0000e-005	0.0000	3.4073
Total	**1.5200e-003**	**1.0200e-003**	**0.0111**	**4.0000e-005**	**4.1800e-003**	**3.0000e-005**	**4.2100e-003**	**1.1100e-003**	**2.0000e-005**	**1.1400e-003**	**0.0000**	**3.4055**	**3.4055**	**7.0000e-005**	**0.0000**	**3.4073**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3592	3.8119	8.1954	0.0474	5.1344	0.0482	5.1826	1.3691	0.0454	1.4145	0.0000	4,377.5385	4,377.5385	0.0510	0.0000	4,378.8121
Unmitigated	0.3592	3.8119	8.1954	0.0474	5.1344	0.0482	5.1826	1.3691	0.0454	1.4145	0.0000	4,377.5385	4,377.5385	0.0510	0.0000	4,378.8121

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,919.63	1,919.63	1919.63	13,822,079	13,822,079
Total	1,919.63	1,919.63	1,919.63	13,822,079	13,822,079

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	21.21	21.21	21.21	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.590657	0.037535	0.185105	0.118290	0.015611	0.005013	0.010768	0.024764	0.001635	0.001742	0.005351	0.002726	0.000802
Unrefrigerated Warehouse-No Rail	0.697900	0.000000	0.000000	0.218800	0.000000	0.000000	0.000000	0.083300	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	183.4873	183.4873	0.0184	3.8000e-003	185.0773
NaturalGas Mitigated	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	18.2979	18.2979	3.5000e-004	3.4000e-004	18.4066
NaturalGas Unmitigated	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5502	24.5502	4.7000e-004	4.5000e-004	24.6961

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	460054	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5502	24.5502	4.7000e-004	4.5000e-004	24.6961
Total		**2.4800e-003**	**0.0226**	**0.0189**	**1.4000e-004**		**1.7100e-003**	**1.7100e-003**		**1.7100e-003**	**1.7100e-003**	**0.0000**	**24.5502**	**24.5502**	**4.7000e-004**	**4.5000e-004**	**24.6961**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	342889	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	18.2979	18.2979	3.5000e-004	3.4000e-004	18.4066
Total		**1.8500e-003**	**0.0168**	**0.0141**	**1.0000e-004**		**1.2800e-003**	**1.2800e-003**		**1.2800e-003**	**1.2800e-003**	**0.0000**	**18.2979**	**18.2979**	**3.5000e-004**	**3.4000e-004**	**18.4066**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	140506	18.4824	1.8500e-003	3.8000e-004	18.6426
Unrefrigerated Warehouse-No Rail	1.25439e+006	165.0049	0.0165	3.4100e-003	166.4348
Total		**183.4873**	**0.0184**	**3.7900e-003**	**185.0773**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.4782	6.0000e-005	6.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Unmitigated	1.4782	6.0000e-005	6.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140

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	0.1590					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3186					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.2000e-004	6.0000e-005	6.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Total	**1.4782**	**6.0000e-005**	**6.7300e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0131**	**0.0131**	**3.0000e-005**	**0.0000**	**0.0140**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1590					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3186					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.2000e-004	6.0000e-005	6.7300e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0140
Total	**1.4782**	**6.0000e-005**	**6.7300e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0131**	**0.0131**	**3.0000e-005**	**0.0000**	**0.0140**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	78.7584	2.4994	0.0600	159.1278
Unmitigated	78.7584	2.4994	0.0600	159.1278

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	76.5368 / 0	78.7584	2.4994	0.0600	159.1278
Total		**78.7584**	**2.4994**	**0.0600**	**159.1278**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	76.5368 / 0	78.7584	2.4994	0.0600	159.1278
Total		**78.7584**	**2.4994**	**0.0600**	**159.1278**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	63.1525	3.7322	0.0000	156.4577
Unmitigated	63.1525	3.7322	0.0000	156.4577

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	311.11	63.1525	3.7322	0.0000	156.4577
Total		**63.1525**	**3.7322**	**0.0000**	**156.4577**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	311.11	63.1525	3.7322	0.0000	156.4577
Total		**63.1525**	**3.7322**	**0.0000**	**156.4577**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

North Richmond Warehouse - Scenario 4 - 2025

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	330.97	1000sqft	20.18	330,974.00	0
Parking Lot	401.45	1000sqft	9.22	401,446.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	5			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

North Richmond Warehouse - Scenario 4 - 2025 - Contra Costa County, Annual

Project Characteristics - This file is for operational emissions only. Not valid for construction. CO2 intensity factor from PG&E 2015.

Land Use - Quantities from 2/20/20 site plan.

Construction Phase - Construction schedule per Anderson pers. comm.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Demolition - Demoilition building square feet per Project Description.

Architectural Coating - VOC content per BAAQMD Regulation 8.

Vehicle Trips - Trip generation rate of 5.80 / KSF from Fehr & Peer 2020 and 2/20/20 site plan. Trip length per Fehr & Peers 2020. Apply seven days per week.

Vehicle Emission Factors - MDV and HHD rates are specific for this scenario and year.

Vehicle Emission Factors - MDV and HHD rates are specific for this scenario and year.

Vehicle Emission Factors - MDV and HHD rates are specific for this scenario and year.

Area Coating - VOC content per BAAQMD Regulation 8.

Energy Use -

Energy Mitigation - Title 24 2019 Standards per California Energy Commission 2018, and on-site photovoltaic electricity generation for 100% of building load.

Fleet Mix - 69.79% LDA, 21.88% MDV, 8.33% HHD from Fehr & Peers 2020.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	100.00
tblArchitecturalCoating	EF_Parking	150.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	150.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	100
tblAreaCoating	Area_EF_Parking	150	100
tblAreaCoating	Area_EF_Residential_Exterior	150	100

tblConstructionPhase	NumDays	30.00	15.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	45.00	22.00
tblConstructionPhase	NumDays	440.00	220.00
tblConstructionPhase	NumDays	35.00	17.00
tblConstructionPhase	NumDays	35.00	17.00
tblFleetMix	HHD	0.03	0.08
tblFleetMix	LDA	0.60	0.70
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.01	0.00
tblFleetMix	LHD2	4.9330e-003	0.00
tblFleetMix	MCY	5.2540e-003	0.00
tblFleetMix	MDV	0.11	0.22
tblFleetMix	MH	7.4600e-004	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	1.6430e-003	0.00
tblFleetMix	SBUS	2.7040e-003	0.00
tblFleetMix	UBUS	1.6530e-003	0.00
tblGrading	AcresOfGrading	110.00	112.50
tblLandUse	LandUseSquareFeet	330,970.00	330,974.00
tblLandUse	LandUseSquareFeet	401,450.00	401,446.00
tblLandUse	LotAcreage	7.60	20.18
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	WorkerTripNumber	30.00	15.00
tblTripsAndVMT	WorkerTripNumber	35.00	18.00
tblTripsAndVMT	WorkerTripNumber	40.00	20.00
tblTripsAndVMT	WorkerTripNumber	30.00	15.00
tblVehicleEF	HHD	0.40	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.08	0.00
tblVehicleEF	HHD	1.55	0.00
tblVehicleEF	HHD	0.84	0.00
tblVehicleEF	HHD	2.84	0.00
tblVehicleEF	HHD	4,274.18	0.00

tblVehicleEF	HHD	1,530.13	0.00
tblVehicleEF	HHD	8.79	0.00
tblVehicleEF	HHD	13.50	0.00
tblVehicleEF	HHD	1.84	0.00
tblVehicleEF	HHD	19.73	0.00
tblVehicleEF	HHD	7.0080e-003	0.00
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	6.1110e-003	0.00
tblVehicleEF	HHD	9.3000e-005	0.00
tblVehicleEF	HHD	6.7050e-003	0.00
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8130e-003	8.9162e-003
tblVehicleEF	HHD	5.8460e-003	0.00
tblVehicleEF	HHD	8.6000e-005	0.00
tblVehicleEF	HHD	7.3000e-005	0.00
tblVehicleEF	HHD	3.8850e-003	0.00
tblVehicleEF	HHD	0.40	0.00
tblVehicleEF	HHD	4.9000e-005	0.00
tblVehicleEF	HHD	0.09	0.00
tblVehicleEF	HHD	3.2900e-004	0.00
tblVehicleEF	HHD	0.07	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.01	0.00
tblVehicleEF	HHD	1.3400e-004	0.00
tblVehicleEF	HHD	7.3000e-005	0.00
tblVehicleEF	HHD	3.8850e-003	0.00

tblVehicleEF	HHD	0.47	0.00
tblVehicleEF	HHD	4.9000e-005	0.00
tblVehicleEF	HHD	0.14	0.00
tblVehicleEF	HHD	3.2900e-004	0.00
tblVehicleEF	HHD	0.07	0.00
tblVehicleEF	HHD	0.38	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.07	0.00
tblVehicleEF	HHD	1.12	0.00
tblVehicleEF	HHD	0.85	0.00
tblVehicleEF	HHD	2.59	0.00
tblVehicleEF	HHD	4,528.11	0.00
tblVehicleEF	HHD	1,530.13	0.00
tblVehicleEF	HHD	8.79	0.00
tblVehicleEF	HHD	13.93	0.00
tblVehicleEF	HHD	1.77	0.00
tblVehicleEF	HHD	19.72	0.00
tblVehicleEF	HHD	5.9080e-003	0.00
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	6.1110e-003	0.00
tblVehicleEF	HHD	9.3000e-005	0.00
tblVehicleEF	HHD	5.6530e-003	0.00
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8130e-003	8.9162e-003
tblVehicleEF	HHD	5.8460e-003	0.00
tblVehicleEF	HHD	8.6000e-005	0.00

tblVehicleEF	HHD	1.9000e-004	0.00
tblVehicleEF	HHD	4.3090e-003	0.00
tblVehicleEF	HHD	0.38	0.00
tblVehicleEF	HHD	1.1800e-004	0.00
tblVehicleEF	HHD	0.09	0.00
tblVehicleEF	HHD	3.2200e-004	0.00
tblVehicleEF	HHD	0.06	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.01	0.00
tblVehicleEF	HHD	1.3000e-004	0.00
tblVehicleEF	HHD	1.9000e-004	0.00
tblVehicleEF	HHD	4.3090e-003	0.00
tblVehicleEF	HHD	0.44	0.00
tblVehicleEF	HHD	1.1800e-004	0.00
tblVehicleEF	HHD	0.14	0.00
tblVehicleEF	HHD	3.2200e-004	0.00
tblVehicleEF	HHD	0.07	0.00
tblVehicleEF	HHD	0.43	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.08	0.00
tblVehicleEF	HHD	2.13	0.00
tblVehicleEF	HHD	0.84	0.00
tblVehicleEF	HHD	3.08	0.00
tblVehicleEF	HHD	3,923.51	0.00
tblVehicleEF	HHD	1,530.13	0.00
tblVehicleEF	HHD	8.79	0.00
tblVehicleEF	HHD	12.90	0.00

tblVehicleEF	HHD	1.87	0.00
tblVehicleEF	HHD	19.75	0.00
tblVehicleEF	HHD	8.5270e-003	0.00
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	6.1110e-003	0.00
tblVehicleEF	HHD	9.3000e-005	0.00
tblVehicleEF	HHD	8.1580e-003	0.00
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8130e-003	8.9162e-003
tblVehicleEF	HHD	5.8460e-003	0.00
tblVehicleEF	HHD	8.6000e-005	0.00
tblVehicleEF	HHD	2.8000e-005	0.00
tblVehicleEF	HHD	4.0400e-003	0.00
tblVehicleEF	HHD	0.44	0.00
tblVehicleEF	HHD	2.1000e-005	0.00
tblVehicleEF	HHD	0.09	0.00
tblVehicleEF	HHD	3.6600e-004	0.00
tblVehicleEF	HHD	0.07	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.01	0.00
tblVehicleEF	HHD	1.3800e-004	0.00
tblVehicleEF	HHD	2.8000e-005	0.00
tblVehicleEF	HHD	4.0400e-003	0.00
tblVehicleEF	HHD	0.50	0.00
tblVehicleEF	HHD	2.1000e-005	0.00
tblVehicleEF	HHD	0.14	0.00

tblVehicleEF	HHD	3.6600e-004	0.00
tblVehicleEF	HHD	0.08	0.00
tblVehicleEF	MDV	7.8070e-003	1.5614e-003
tblVehicleEF	MDV	0.01	2.7150e-003
tblVehicleEF	MDV	0.90	0.18
tblVehicleEF	MDV	2.48	0.50
tblVehicleEF	MDV	427.63	85.53
tblVehicleEF	MDV	98.24	19.65
tblVehicleEF	MDV	0.11	0.02
tblVehicleEF	MDV	0.22	0.04
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	8.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.7360e-003	3.4720e-004
tblVehicleEF	MDV	2.3850e-003	4.7700e-004
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	1.5990e-003	3.1980e-004
tblVehicleEF	MDV	2.1930e-003	4.3860e-004
tblVehicleEF	MDV	0.06	0.01
tblVehicleEF	MDV	0.17	0.04
tblVehicleEF	MDV	0.06	0.01
tblVehicleEF	MDV	0.02	3.8994e-003
tblVehicleEF	MDV	0.10	0.02
tblVehicleEF	MDV	0.18	0.04
tblVehicleEF	MDV	4.2800e-003	8.5600e-004
tblVehicleEF	MDV	1.0260e-003	2.0520e-004
tblVehicleEF	MDV	0.06	0.01

tblVehicleEF	MDV	0.17	0.04
tblVehicleEF	MDV	0.06	0.01
tblVehicleEF	MDV	0.03	5.6770e-003
tblVehicleEF	MDV	0.10	0.02
tblVehicleEF	MDV	0.20	0.04
tblVehicleEF	MDV	8.8420e-003	1.7684e-003
tblVehicleEF	MDV	0.01	2.1890e-003
tblVehicleEF	MDV	1.09	0.22
tblVehicleEF	MDV	1.91	0.38
tblVehicleEF	MDV	465.57	93.11
tblVehicleEF	MDV	98.24	19.65
tblVehicleEF	MDV	0.10	0.02
tblVehicleEF	MDV	0.19	0.04
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	8.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.7360e-003	3.4720e-004
tblVehicleEF	MDV	2.3850e-003	4.7700e-004
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	1.5990e-003	3.1980e-004
tblVehicleEF	MDV	2.1930e-003	4.3860e-004
tblVehicleEF	MDV	0.15	0.04
tblVehicleEF	MDV	0.19	0.04
tblVehicleEF	MDV	0.14	0.03
tblVehicleEF	MDV	0.02	4.4116e-003
tblVehicleEF	MDV	0.09	0.02
tblVehicleEF	MDV	0.15	0.03

tblVehicleEF	MDV	4.6610e-003	9.3220e-004
tblVehicleEF	MDV	1.0150e-003	2.0300e-004
tblVehicleEF	MDV	0.15	0.04
tblVehicleEF	MDV	0.19	0.04
tblVehicleEF	MDV	0.14	0.03
tblVehicleEF	MDV	0.03	6.4246e-003
tblVehicleEF	MDV	0.09	0.02
tblVehicleEF	MDV	0.16	0.03
tblVehicleEF	MDV	7.5790e-003	1.5158e-003
tblVehicleEF	MDV	0.02	3.1020e-003
tblVehicleEF	MDV	0.88	0.18
tblVehicleEF	MDV	2.94	0.59
tblVehicleEF	MDV	422.43	84.49
tblVehicleEF	MDV	98.24	19.65
tblVehicleEF	MDV	0.12	0.02
tblVehicleEF	MDV	0.24	0.05
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	8.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.7360e-003	3.4720e-004
tblVehicleEF	MDV	2.3850e-003	4.7700e-004
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	1.5990e-003	3.1980e-004
tblVehicleEF	MDV	2.1930e-003	4.3860e-004
tblVehicleEF	MDV	0.02	4.7852e-003
tblVehicleEF	MDV	0.18	0.04
tblVehicleEF	MDV	0.03	5.9180e-003

tblVehicleEF	MDV	0.02	3.7866e-003
tblVehicleEF	MDV	0.12	0.02
tblVehicleEF	MDV	0.21	0.04
tblVehicleEF	MDV	4.2270e-003	8.4540e-004
tblVehicleEF	MDV	1.0340e-003	2.0680e-004
tblVehicleEF	MDV	0.02	4.7852e-003
tblVehicleEF	MDV	0.18	0.04
tblVehicleEF	MDV	0.03	5.9180e-003
tblVehicleEF	MDV	0.03	5.5126e-003
tblVehicleEF	MDV	0.12	0.02
tblVehicleEF	MDV	0.23	0.05
tblVehicleTrips	CC_TL	7.30	21.21
tblVehicleTrips	CNW_TL	7.30	21.21
tblVehicleTrips	CW_TL	9.50	21.21
tblVehicleTrips	ST_TR	1.68	5.80
tblVehicleTrips	SU_TR	1.68	5.80
tblVehicleTrips	WD_TR	1.68	5.80

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.7310	7.0353	5.8646	0.0141	0.7290	0.2973	1.0262	0.2745	0.2779	0.5525	0.0000	1,258.2074	1,258.2074	0.2041	0.0000	1,263.3107
2022	1.6401	0.3450	0.4190	8.1000e-004	0.0149	0.0161	0.0309	4.0100e-003	0.0150	0.0190	0.0000	71.7092	71.7092	0.0153	0.0000	72.0905
Maximum	**1.6401**	**7.0353**	**5.8646**	**0.0141**	**0.7290**	**0.2973**	**1.0262**	**0.2745**	**0.2779**	**0.5525**	**0.0000**	**1,258.2074**	**1,258.2074**	**0.2041**	**0.0000**	**1,263.3107**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.7310	7.0353	5.8646	0.0141	0.7290	0.2973	1.0262	0.2745	0.2779	0.5525	0.0000	1,258.2065	1,258.2065	0.2041	0.0000	1,263.3099
2022	1.6401	0.3450	0.4190	8.1000e-004	0.0149	0.0161	0.0309	4.0100e-003	0.0150	0.0190	0.0000	71.7092	71.7092	0.0153	0.0000	72.0904
Maximum	**1.6401**	**7.0353**	**5.8646**	**0.0141**	**0.7290**	**0.2973**	**1.0262**	**0.2745**	**0.2779**	**0.5525**	**0.0000**	**1,258.2065**	**1,258.2065**	**0.2041**	**0.0000**	**1,263.3099**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2021**	**3-31-2021**	2.5674	2.5674
2	**4-1-2021**	**6-30-2021**	1.7211	1.7211
3	**7-1-2021**	**9-30-2021**	1.7400	1.7400
4	**10-1-2021**	**12-31-2021**	1.7492	1.7492
5	**1-1-2022**	**3-31-2022**	1.9515	1.9515
		Highest	2.5674	2.5674

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4782	6.0000e-005	6.7100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0139
Energy	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	208.0375	208.0375	0.0188	4.2500e-003	209.7735
Mobile	0.2326	0.5117	5.9392	0.0265	5.1350	0.0200	5.1550	1.3693	0.0184	1.3878	0.0000	2,403.8800	2,403.8800	0.0360	0.0000	2,404.7796
Waste						0.0000	0.0000		0.0000	0.0000	63.1525	0.0000	63.1525	3.7322	0.0000	156.4577
Water						0.0000	0.0000		0.0000	0.0000	24.2816	54.4768	78.7584	2.4994	0.0600	159.1278
Total	**1.7133**	**0.5343**	**5.9648**	**0.0267**	**5.1350**	**0.0217**	**5.1568**	**1.3693**	**0.0202**	**1.3895**	**87.4341**	**2,666.4074**	**2,753.8416**	**6.2865**	**0.0643**	**2,930.1525**

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	1.4782	6.0000e-005	6.7100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0139
Energy	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	18.2979	18.2979	3.5000e-004	3.4000e-004	18.4066
Mobile	0.2326	0.5117	5.9392	0.0265	5.1350	0.0200	5.1550	1.3693	0.0184	1.3878	0.0000	2,403.8800	2,403.8800	0.0360	0.0000	2,404.7796
Waste						0.0000	0.0000		0.0000	0.0000	63.1525	0.0000	63.1525	3.7322	0.0000	156.4577
Water						0.0000	0.0000		0.0000	0.0000	24.2816	54.4768	78.7584	2.4994	0.0600	159.1278
Total	**1.7127**	**0.5285**	**5.9600**	**0.0266**	**5.1350**	**0.0213**	**5.1563**	**1.3693**	**0.0197**	**1.3891**	**87.4341**	**2,476.6678**	**2,564.1019**	**6.2680**	**0.0604**	**2,738.7857**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.04**	**1.07**	**0.08**	**0.15**	**0.00**	**1.98**	**0.01**	**0.00**	**2.13**	**0.03**	**0.00**	**7.12**	**6.89**	**0.29**	**6.08**	**6.53**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2021	1/21/2021	5	15	
2	Site Preparation	Site Preparation	1/22/2021	2/4/2021	5	10	
3	Grading	Grading	2/5/2021	3/8/2021	5	22	
4	Building Construction	Building Construction	3/9/2021	1/10/2022	5	220	
5	Paving	Paving	1/11/2022	2/2/2022	5	17	
6	Architectural Coating	Architectural Coating	2/3/2022	2/25/2022	5	17	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 9.22

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 496,461; Non-Residential Outdoor: 165,487; Striped Parking Area: 24,087 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

North Richmond Warehouse - Scenario 4 - 2025 - Contra Costa County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	2	8.00	81	0.73
Demolition	Excavators	6	8.00	158	0.38
Demolition	Rubber Tired Dozers	4	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	6	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	8	8.00	97	0.37
Grading	Excavators	4	8.00	158	0.38
Grading	Graders	2	8.00	187	0.41
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	4	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Cranes	2	7.00	231	0.29
Building Construction	Forklifts	6	8.00	89	0.20
Building Construction	Generator Sets	2	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	6	7.00	97	0.37
Building Construction	Welders	2	8.00	46	0.45
Paving	Pavers	4	8.00	130	0.42
Paving	Paving Equipment	4	8.00	132	0.36
Paving	Rollers	4	8.00	80	0.38
Architectural Coating	Air Compressors	2	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	12	15.00	0.00	60.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	14	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	16	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	18	308.00	120.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	12	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	2	62.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.5000e-003	0.0000	6.5000e-003	9.8000e-004	0.0000	9.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0012	51.0012	0.0144	0.0000	51.3601
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**6.5000e-003**	**0.0233**	**0.0298**	**9.8000e-004**	**0.0216**	**0.0226**	**0.0000**	**51.0012**	**51.0012**	**0.0144**	**0.0000**	**51.3601**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3000e-004	8.0300e-003	1.5900e-003	2.0000e-005	5.1000e-004	3.0000e-005	5.3000e-004	1.4000e-004	2.0000e-005	1.6000e-004	0.0000	2.2468	2.2468	1.0000e-004	0.0000	2.2492
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.5800e-003	1.0000e-005	8.9000e-004	1.0000e-005	9.0000e-004	2.4000e-004	1.0000e-005	2.4000e-004	0.0000	0.7550	0.7550	2.0000e-005	0.0000	0.7554
Total	**5.8000e-004**	**8.2700e-003**	**4.1700e-003**	**3.0000e-005**	**1.4000e-003**	**4.0000e-005**	**1.4300e-003**	**3.8000e-004**	**3.0000e-005**	**4.0000e-004**	**0.0000**	**3.0018**	**3.0018**	**1.2000e-004**	**0.0000**	**3.0047**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.5000e-003	0.0000	6.5000e-003	9.8000e-004	0.0000	9.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0011	51.0011	0.0144	0.0000	51.3600
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**6.5000e-003**	**0.0233**	**0.0298**	**9.8000e-004**	**0.0216**	**0.0226**	**0.0000**	**51.0011**	**51.0011**	**0.0144**	**0.0000**	**51.3600**

3.2 Demolition - 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	2.3000e-004	8.0300e-003	1.5900e-003	2.0000e-005	5.1000e-004	3.0000e-005	5.3000e-004	1.4000e-004	2.0000e-005	1.6000e-004	0.0000	2.2468	2.2468	1.0000e-004	0.0000	2.2492
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.5800e-003	1.0000e-005	8.9000e-004	1.0000e-005	9.0000e-004	2.4000e-004	1.0000e-005	2.4000e-004	0.0000	0.7550	0.7550	2.0000e-005	0.0000	0.7554
Total	**5.8000e-004**	**8.2700e-003**	**4.1700e-003**	**3.0000e-005**	**1.4000e-003**	**4.0000e-005**	**1.4300e-003**	**3.8000e-004**	**3.0000e-005**	**4.0000e-004**	**0.0000**	**3.0018**	**3.0018**	**1.2000e-004**	**0.0000**	**3.0047**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.9000e-004	2.0600e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6040	0.6040	1.0000e-005	0.0000	0.6044
Total	**2.8000e-004**	**1.9000e-004**	**2.0600e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6040**	**0.6040**	**1.0000e-005**	**0.0000**	**0.6044**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7060
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7060**

3.3 Site Preparation - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.9000e-004	2.0600e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6040	0.6040	1.0000e-005	0.0000	0.6044
Total	**2.8000e-004**	**1.9000e-004**	**2.0600e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6040**	**0.6040**	**1.0000e-005**	**0.0000**	**0.6044**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1921	0.0000	0.1921	0.0793	0.0000	0.0793	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0922	1.0208	0.6793	1.3600e-003		0.0437	0.0437		0.0402	0.0402	0.0000	119.8890	119.8890	0.0388	0.0000	120.8583
Total	**0.0922**	**1.0208**	**0.6793**	**1.3600e-003**	**0.1921**	**0.0437**	**0.2358**	**0.0793**	**0.0402**	**0.1195**	**0.0000**	**119.8890**	**119.8890**	**0.0388**	**0.0000**	**120.8583**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.8000e-004	5.0400e-003	2.0000e-005	1.7400e-003	1.0000e-005	1.7600e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.4765	1.4765	3.0000e-005	0.0000	1.4773
Total	**6.8000e-004**	**4.8000e-004**	**5.0400e-003**	**2.0000e-005**	**1.7400e-003**	**1.0000e-005**	**1.7600e-003**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**0.0000**	**1.4765**	**1.4765**	**3.0000e-005**	**0.0000**	**1.4773**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1921	0.0000	0.1921	0.0793	0.0000	0.0793	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0922	1.0208	0.6793	1.3600e-003		0.0437	0.0437		0.0402	0.0402	0.0000	119.8888	119.8888	0.0388	0.0000	120.8582
Total	**0.0922**	**1.0208**	**0.6793**	**1.3600e-003**	**0.1921**	**0.0437**	**0.2358**	**0.0793**	**0.0402**	**0.1195**	**0.0000**	**119.8888**	**119.8888**	**0.0388**	**0.0000**	**120.8582**

3.4 Grading - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.8000e-004	5.0400e-003	2.0000e-005	1.7400e-003	1.0000e-005	1.7600e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.4765	1.4765	3.0000e-005	0.0000	1.4773
Total	**6.8000e-004**	**4.8000e-004**	**5.0400e-003**	**2.0000e-005**	**1.7400e-003**	**1.0000e-005**	**1.7600e-003**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**0.0000**	**1.4765**	**1.4765**	**3.0000e-005**	**0.0000**	**1.4773**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4068	3.7305	3.5471	5.7600e-003		0.2051	0.2051		0.1929	0.1929	0.0000	495.7038	495.7038	0.1196	0.0000	498.6936
Total	**0.4068**	**3.7305**	**3.5471**	**5.7600e-003**		**0.2051**	**0.2051**		**0.1929**	**0.1929**	**0.0000**	**495.7038**	**495.7038**	**0.1196**	**0.0000**	**498.6936**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0420	1.3272	0.3372	3.4700e-003	0.0845	2.9800e-003	0.0874	0.0244	2.8500e-003	0.0273	0.0000	331.9198	331.9198	0.0154	0.0000	332.3051
Worker	0.1021	0.0713	0.7547	2.4500e-003	0.2614	1.7000e-003	0.2631	0.0695	1.5600e-003	0.0711	0.0000	221.1756	221.1756	5.0300e-003	0.0000	221.3013
Total	**0.1441**	**1.3985**	**1.0919**	**5.9200e-003**	**0.3458**	**4.6800e-003**	**0.3505**	**0.0939**	**4.4100e-003**	**0.0983**	**0.0000**	**553.0955**	**553.0955**	**0.0204**	**0.0000**	**553.6064**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4068	3.7305	3.5471	5.7600e-003		0.2051	0.2051		0.1929	0.1929	0.0000	495.7032	495.7032	0.1196	0.0000	498.6930
Total	**0.4068**	**3.7305**	**3.5471**	**5.7600e-003**		**0.2051**	**0.2051**		**0.1929**	**0.1929**	**0.0000**	**495.7032**	**495.7032**	**0.1196**	**0.0000**	**498.6930**

3.5 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0420	1.3272	0.3372	3.4700e-003	0.0845	2.9800e-003	0.0874	0.0244	2.8500e-003	0.0273	0.0000	331.9198	331.9198	0.0154	0.0000	332.3051
Worker	0.1021	0.0713	0.7547	2.4500e-003	0.2614	1.7000e-003	0.2631	0.0695	1.5600e-003	0.0711	0.0000	221.1756	221.1756	5.0300e-003	0.0000	221.3013
Total	**0.1441**	**1.3985**	**1.0919**	**5.9200e-003**	**0.3458**	**4.6800e-003**	**0.3505**	**0.0939**	**4.4100e-003**	**0.0983**	**0.0000**	**553.0955**	**553.0955**	**0.0204**	**0.0000**	**553.6064**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0102	0.0937	0.0982	1.6000e-004		4.8500e-003	4.8500e-003		4.5700e-003	4.5700e-003	0.0000	13.9035	13.9035	3.3300e-003	0.0000	13.9868
Total	**0.0102**	**0.0937**	**0.0982**	**1.6000e-004**		**4.8500e-003**	**4.8500e-003**		**4.5700e-003**	**4.5700e-003**	**0.0000**	**13.9035**	**13.9035**	**3.3300e-003**	**0.0000**	**13.9868**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-003	0.0352	8.8700e-003	1.0000e-004	2.3700e-003	7.0000e-005	2.4400e-003	6.8000e-004	7.0000e-005	7.5000e-004	0.0000	9.2180	9.2180	4.1000e-004	0.0000	9.2282
Worker	2.6600e-003	1.7900e-003	0.0194	7.0000e-005	7.3300e-003	5.0000e-005	7.3700e-003	1.9500e-003	4.0000e-005	1.9900e-003	0.0000	5.9709	5.9709	1.3000e-004	0.0000	5.9741
Total	**3.7600e-003**	**0.0369**	**0.0283**	**1.7000e-004**	**9.7000e-003**	**1.2000e-004**	**9.8100e-003**	**2.6300e-003**	**1.1000e-004**	**2.7400e-003**	**0.0000**	**15.1889**	**15.1889**	**5.4000e-004**	**0.0000**	**15.2023**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0102	0.0937	0.0982	1.6000e-004		4.8500e-003	4.8500e-003		4.5700e-003	4.5700e-003	0.0000	13.9035	13.9035	3.3300e-003	0.0000	13.9868
Total	**0.0102**	**0.0937**	**0.0982**	**1.6000e-004**		**4.8500e-003**	**4.8500e-003**		**4.5700e-003**	**4.5700e-003**	**0.0000**	**13.9035**	**13.9035**	**3.3300e-003**	**0.0000**	**13.9868**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-003	0.0352	8.8700e-003	1.0000e-004	2.3700e-003	7.0000e-005	2.4400e-003	6.8000e-004	7.0000e-005	7.5000e-004	0.0000	9.2180	9.2180	4.1000e-004	0.0000	9.2282
Worker	2.6600e-003	1.7900e-003	0.0194	7.0000e-005	7.3300e-003	5.0000e-005	7.3700e-003	1.9500e-003	4.0000e-005	1.9900e-003	0.0000	5.9709	5.9709	1.3000e-004	0.0000	5.9741
Total	**3.7600e-003**	**0.0369**	**0.0283**	**1.7000e-004**	**9.7000e-003**	**1.2000e-004**	**9.8100e-003**	**2.6300e-003**	**1.1000e-004**	**2.7400e-003**	**0.0000**	**15.1889**	**15.1889**	**5.4000e-004**	**0.0000**	**15.2023**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0188	0.1891	0.2479	3.9000e-004		9.6500e-003	9.6500e-003		8.8800e-003	8.8800e-003	0.0000	34.0469	34.0469	0.0110	0.0000	34.3221
Paving	0.0121					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0308**	**0.1891**	**0.2479**	**3.9000e-004**		**9.6500e-003**	**9.6500e-003**		**8.8800e-003**	**8.8800e-003**	**0.0000**	**34.0469**	**34.0469**	**0.0110**	**0.0000**	**34.3221**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.5000e-004	2.6800e-003	1.0000e-005	1.0100e-003	1.0000e-005	1.0200e-003	2.7000e-004	1.0000e-005	2.7000e-004	0.0000	0.8239	0.8239	2.0000e-005	0.0000	0.8244
Total	**3.7000e-004**	**2.5000e-004**	**2.6800e-003**	**1.0000e-005**	**1.0100e-003**	**1.0000e-005**	**1.0200e-003**	**2.7000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.8239**	**0.8239**	**2.0000e-005**	**0.0000**	**0.8244**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0188	0.1891	0.2479	3.9000e-004		9.6500e-003	9.6500e-003		8.8800e-003	8.8800e-003	0.0000	34.0468	34.0468	0.0110	0.0000	34.3221
Paving	0.0121					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0308**	**0.1891**	**0.2479**	**3.9000e-004**		**9.6500e-003**	**9.6500e-003**		**8.8800e-003**	**8.8800e-003**	**0.0000**	**34.0468**	**34.0468**	**0.0110**	**0.0000**	**34.3221**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.5000e-004	2.6800e-003	1.0000e-005	1.0100e-003	1.0000e-005	1.0200e-003	2.7000e-004	1.0000e-005	2.7000e-004	0.0000	0.8239	0.8239	2.0000e-005	0.0000	0.8244
Total	**3.7000e-004**	**2.5000e-004**	**2.6800e-003**	**1.0000e-005**	**1.0100e-003**	**1.0000e-005**	**1.0200e-003**	**2.7000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.8239**	**0.8239**	**2.0000e-005**	**0.0000**	**0.8244**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5899					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4800e-003	0.0239	0.0308	5.0000e-005		1.3900e-003	1.3900e-003		1.3900e-003	1.3900e-003	0.0000	4.3405	4.3405	2.8000e-004	0.0000	4.3476
Total	**1.5934**	**0.0239**	**0.0308**	**5.0000e-005**		**1.3900e-003**	**1.3900e-003**		**1.3900e-003**	**1.3900e-003**	**0.0000**	**4.3405**	**4.3405**	**2.8000e-004**	**0.0000**	**4.3476**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.0200e-003	0.0111	4.0000e-005	4.1800e-003	3.0000e-005	4.2100e-003	1.1100e-003	2.0000e-005	1.1400e-003	0.0000	3.4055	3.4055	7.0000e-005	0.0000	3.4073
Total	**1.5200e-003**	**1.0200e-003**	**0.0111**	**4.0000e-005**	**4.1800e-003**	**3.0000e-005**	**4.2100e-003**	**1.1100e-003**	**2.0000e-005**	**1.1400e-003**	**0.0000**	**3.4055**	**3.4055**	**7.0000e-005**	**0.0000**	**3.4073**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5899					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4800e-003	0.0239	0.0308	5.0000e-005		1.3900e-003	1.3900e-003		1.3900e-003	1.3900e-003	0.0000	4.3405	4.3405	2.8000e-004	0.0000	4.3476
Total	**1.5934**	**0.0239**	**0.0308**	**5.0000e-005**		**1.3900e-003**	**1.3900e-003**		**1.3900e-003**	**1.3900e-003**	**0.0000**	**4.3405**	**4.3405**	**2.8000e-004**	**0.0000**	**4.3476**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.0200e-003	0.0111	4.0000e-005	4.1800e-003	3.0000e-005	4.2100e-003	1.1100e-003	2.0000e-005	1.1400e-003	0.0000	3.4055	3.4055	7.0000e-005	0.0000	3.4073
Total	**1.5200e-003**	**1.0200e-003**	**0.0111**	**4.0000e-005**	**4.1800e-003**	**3.0000e-005**	**4.2100e-003**	**1.1100e-003**	**2.0000e-005**	**1.1400e-003**	**0.0000**	**3.4055**	**3.4055**	**7.0000e-005**	**0.0000**	**3.4073**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2326	0.5117	5.9392	0.0265	5.1350	0.0200	5.1550	1.3693	0.0184	1.3878	0.0000	2,403.8800	2,403.8800	0.0360	0.0000	2,404.7796
Unmitigated	0.2326	0.5117	5.9392	0.0265	5.1350	0.0200	5.1550	1.3693	0.0184	1.3878	0.0000	2,403.8800	2,403.8800	0.0360	0.0000	2,404.7796

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,919.63	1,919.63	1919.63	13,822,079	13,822,079
Total	1,919.63	1,919.63	1,919.63	13,822,079	13,822,079

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	21.21	21.21	21.21	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.597341	0.036425	0.184736	0.114304	0.014288	0.004933	0.010771	0.025203	0.001643	0.001653	0.005254	0.002704	0.000746
Unrefrigerated Warehouse-No Rail	0.697900	0.000000	0.000000	0.218800	0.000000	0.000000	0.000000	0.083300	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	183.4873	183.4873	0.0184	3.8000e-003	185.0773
NaturalGas Mitigated	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	18.2979	18.2979	3.5000e-004	3.4000e-004	18.4066
NaturalGas Unmitigated	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5502	24.5502	4.7000e-004	4.5000e-004	24.6961

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	460054	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5502	24.5502	4.7000e-004	4.5000e-004	24.6961
Total		**2.4800e-003**	**0.0226**	**0.0189**	**1.4000e-004**		**1.7100e-003**	**1.7100e-003**		**1.7100e-003**	**1.7100e-003**	**0.0000**	**24.5502**	**24.5502**	**4.7000e-004**	**4.5000e-004**	**24.6961**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	342889	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	18.2979	18.2979	3.5000e-004	3.4000e-004	18.4066
Total		**1.8500e-003**	**0.0168**	**0.0141**	**1.0000e-004**		**1.2800e-003**	**1.2800e-003**		**1.2800e-003**	**1.2800e-003**	**0.0000**	**18.2979**	**18.2979**	**3.5000e-004**	**3.4000e-004**	**18.4066**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	140506	18.4824	1.8500e-003	3.8000e-004	18.6426
Unrefrigerated Warehouse-No Rail	1.25439e+006	165.0049	0.0165	3.4100e-003	166.4348
Total		**183.4873**	**0.0184**	**3.7900e-003**	**185.0773**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.4782	6.0000e-005	6.7100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0139
Unmitigated	1.4782	6.0000e-005	6.7100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0139

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	0.1590					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3186					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.2000e-004	6.0000e-005	6.7100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0139
Total	**1.4782**	**6.0000e-005**	**6.7100e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0131**	**0.0131**	**3.0000e-005**	**0.0000**	**0.0139**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1590					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3186					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.2000e-004	6.0000e-005	6.7100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0139
Total	**1.4782**	**6.0000e-005**	**6.7100e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0131**	**0.0131**	**3.0000e-005**	**0.0000**	**0.0139**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	78.7584	2.4994	0.0600	159.1278
Unmitigated	78.7584	2.4994	0.0600	159.1278

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	76.5368 / 0	78.7584	2.4994	0.0600	159.1278
Total		**78.7584**	**2.4994**	**0.0600**	**159.1278**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	76.5368 / 0	78.7584	2.4994	0.0600	159.1278
Total		**78.7584**	**2.4994**	**0.0600**	**159.1278**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	63.1525	3.7322	0.0000	156.4577
Unmitigated	63.1525	3.7322	0.0000	156.4577

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	311.11	63.1525	3.7322	0.0000	156.4577
Total		**63.1525**	**3.7322**	**0.0000**	**156.4577**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	311.11	63.1525	3.7322	0.0000	156.4577
Total		**63.1525**	**3.7322**	**0.0000**	**156.4577**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

North Richmond Warehouse - Scenario 4 - 2027

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	330.97	1000sqft	20.18	330,974.00	0
Parking Lot	401.45	1000sqft	9.22	401,446.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	5			**Operational Year**	2027
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

North Richmond Warehouse - Scenario 4 - 2027 - Contra Costa County, Annual

Project Characteristics - This file is for operational emissions only. Not valid for construction. CO2 intensity factor from PG&E 2015.

Land Use - Quantities from 2/20/20 site plan.

Construction Phase - Construction schedule per Anderson pers. comm.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Off-road Equipment - Double the default number of construction equipment to achieve construction schedule.

Demolition - Demoilition building square feet per Project Description.

Architectural Coating - VOC content per BAAQMD Regulation 8.

Vehicle Trips - Trip generation rate of 5.80 / KSF from Fehr & Peer 2020 and 2/20/20 site plan. Trip length per Fehr & Peers 2020. Apply seven days per week.

Vehicle Emission Factors - MDV and HHD rates are specific for this scenario and year.

Vehicle Emission Factors - MDV and HHD rates are specific for this scenario and year.

Vehicle Emission Factors - MDV and HHD rates are specific for this scenario and year.

Area Coating - VOC content per BAAQMD Regulation 8.

Energy Use -

Energy Mitigation - Title 24 2019 Standards per California Energy Commission 2018, and on-site photovoltaic electricity generation for 100% of building load.

Fleet Mix - 69.79% LDA, 21.88% MDV, 8.33% HHD from Fehr & Peers 2020.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	100.00
tblArchitecturalCoating	EF_Parking	150.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	150.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	100
tblAreaCoating	Area_EF_Parking	150	100
tblAreaCoating	Area_EF_Residential_Exterior	150	100

tblConstructionPhase	NumDays	30.00	15.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	45.00	22.00
tblConstructionPhase	NumDays	440.00	220.00
tblConstructionPhase	NumDays	35.00	17.00
tblConstructionPhase	NumDays	35.00	17.00
tblFleetMix	HHD	0.03	0.08
tblFleetMix	LDA	0.60	0.70
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.01	0.00
tblFleetMix	LHD2	4.8840e-003	0.00
tblFleetMix	MCY	5.1870e-003	0.00
tblFleetMix	MDV	0.11	0.22
tblFleetMix	MH	7.0500e-004	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	1.6530e-003	0.00
tblFleetMix	SBUS	2.6870e-003	0.00
tblFleetMix	UBUS	1.6000e-003	0.00
tblGrading	AcresOfGrading	110.00	112.50
tblLandUse	LandUseSquareFeet	330,970.00	330,974.00
tblLandUse	LandUseSquareFeet	401,450.00	401,446.00
tblLandUse	LotAcreage	7.60	20.18
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblTripsAndVMT	WorkerTripNumber	30.00	15.00
tblTripsAndVMT	WorkerTripNumber	35.00	18.00
tblTripsAndVMT	WorkerTripNumber	40.00	20.00
tblTripsAndVMT	WorkerTripNumber	30.00	15.00
tblVehicleEF	HHD	0.37	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.06	0.00
tblVehicleEF	HHD	1.50	0.00
tblVehicleEF	HHD	0.85	0.00
tblVehicleEF	HHD	2.91	0.00
tblVehicleEF	HHD	4,177.76	0.00

tblVehicleEF	HHD	1,513.19	0.00
tblVehicleEF	HHD	8.98	0.00
tblVehicleEF	HHD	12.96	0.00
tblVehicleEF	HHD	1.72	0.00
tblVehicleEF	HHD	19.68	0.00
tblVehicleEF	HHD	5.3000e-003	0.00
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	5.9160e-003	0.00
tblVehicleEF	HHD	9.6000e-005	0.00
tblVehicleEF	HHD	5.0710e-003	0.00
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8170e-003	8.9219e-003
tblVehicleEF	HHD	5.6600e-003	0.00
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	7.1000e-005	0.00
tblVehicleEF	HHD	3.6060e-003	0.00
tblVehicleEF	HHD	0.39	0.00
tblVehicleEF	HHD	4.8000e-005	0.00
tblVehicleEF	HHD	0.08	0.00
tblVehicleEF	HHD	3.1300e-004	0.00
tblVehicleEF	HHD	0.06	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.01	0.00
tblVehicleEF	HHD	1.3700e-004	0.00
tblVehicleEF	HHD	7.1000e-005	0.00
tblVehicleEF	HHD	3.6060e-003	0.00

tblVehicleEF	HHD	0.45	0.00
tblVehicleEF	HHD	4.8000e-005	0.00
tblVehicleEF	HHD	0.14	0.00
tblVehicleEF	HHD	3.1300e-004	0.00
tblVehicleEF	HHD	0.07	0.00
tblVehicleEF	HHD	0.35	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.06	0.00
tblVehicleEF	HHD	1.09	0.00
tblVehicleEF	HHD	0.86	0.00
tblVehicleEF	HHD	2.65	0.00
tblVehicleEF	HHD	4,425.96	0.00
tblVehicleEF	HHD	1,513.19	0.00
tblVehicleEF	HHD	8.98	0.00
tblVehicleEF	HHD	13.38	0.00
tblVehicleEF	HHD	1.66	0.00
tblVehicleEF	HHD	19.66	0.00
tblVehicleEF	HHD	4.4680e-003	0.00
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	5.9160e-003	0.00
tblVehicleEF	HHD	9.6000e-005	0.00
tblVehicleEF	HHD	4.2750e-003	0.00
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8170e-003	8.9219e-003
tblVehicleEF	HHD	5.6600e-003	0.00
tblVehicleEF	HHD	8.9000e-005	0.00

tblVehicleEF	HHD	1.8000e-004	0.00
tblVehicleEF	HHD	3.9880e-003	0.00
tblVehicleEF	HHD	0.37	0.00
tblVehicleEF	HHD	1.1200e-004	0.00
tblVehicleEF	HHD	0.08	0.00
tblVehicleEF	HHD	3.0500e-004	0.00
tblVehicleEF	HHD	0.06	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.01	0.00
tblVehicleEF	HHD	1.3300e-004	0.00
tblVehicleEF	HHD	1.8000e-004	0.00
tblVehicleEF	HHD	3.9880e-003	0.00
tblVehicleEF	HHD	0.42	0.00
tblVehicleEF	HHD	1.1200e-004	0.00
tblVehicleEF	HHD	0.14	0.00
tblVehicleEF	HHD	3.0500e-004	0.00
tblVehicleEF	HHD	0.06	0.00
tblVehicleEF	HHD	0.40	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.07	0.00
tblVehicleEF	HHD	2.06	0.00
tblVehicleEF	HHD	0.85	0.00
tblVehicleEF	HHD	3.16	0.00
tblVehicleEF	HHD	3,835.00	0.00
tblVehicleEF	HHD	1,513.19	0.00
tblVehicleEF	HHD	8.98	0.00
tblVehicleEF	HHD	12.38	0.00

tblVehicleEF	HHD	1.75	0.00
tblVehicleEF	HHD	19.69	0.00
tblVehicleEF	HHD	6.4490e-003	0.00
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	5.9160e-003	0.00
tblVehicleEF	HHD	9.6000e-005	0.00
tblVehicleEF	HHD	6.1700e-003	0.00
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8170e-003	8.9219e-003
tblVehicleEF	HHD	5.6600e-003	0.00
tblVehicleEF	HHD	8.9000e-005	0.00
tblVehicleEF	HHD	2.9000e-005	0.00
tblVehicleEF	HHD	3.7180e-003	0.00
tblVehicleEF	HHD	0.42	0.00
tblVehicleEF	HHD	2.1000e-005	0.00
tblVehicleEF	HHD	0.08	0.00
tblVehicleEF	HHD	3.5000e-004	0.00
tblVehicleEF	HHD	0.06	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.01	0.00
tblVehicleEF	HHD	1.4100e-004	0.00
tblVehicleEF	HHD	2.9000e-005	0.00
tblVehicleEF	HHD	3.7180e-003	0.00
tblVehicleEF	HHD	0.49	0.00
tblVehicleEF	HHD	2.1000e-005	0.00
tblVehicleEF	HHD	0.14	0.00

tblVehicleEF	HHD	3.5000e-004	0.00
tblVehicleEF	HHD	0.07	0.00
tblVehicleEF	MDV	6.5370e-003	0.00
tblVehicleEF	MDV	0.01	0.00
tblVehicleEF	MDV	0.79	0.00
tblVehicleEF	MDV	2.11	0.00
tblVehicleEF	MDV	399.58	0.00
tblVehicleEF	MDV	92.19	0.00
tblVehicleEF	MDV	0.09	0.00
tblVehicleEF	MDV	0.18	0.00
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	8.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.6370e-003	0.00
tblVehicleEF	MDV	2.3220e-003	0.00
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	1.5080e-003	0.00
tblVehicleEF	MDV	2.1350e-003	0.00
tblVehicleEF	MDV	0.06	3.2640e-003
tblVehicleEF	MDV	0.16	4.8880e-003
tblVehicleEF	MDV	0.06	1.0062e-003
tblVehicleEF	MDV	0.02	0.00
tblVehicleEF	MDV	0.09	0.00
tblVehicleEF	MDV	0.15	0.00
tblVehicleEF	MDV	3.9980e-003	0.00
tblVehicleEF	MDV	9.5800e-004	0.00
tblVehicleEF	MDV	0.06	3.2640e-003

tblVehicleEF	MDV	0.16	4.8880e-003
tblVehicleEF	MDV	0.06	1.0062e-003
tblVehicleEF	MDV	0.02	0.00
tblVehicleEF	MDV	0.09	0.00
tblVehicleEF	MDV	0.16	0.00
tblVehicleEF	MDV	7.4040e-003	0.00
tblVehicleEF	MDV	8.9730e-003	0.00
tblVehicleEF	MDV	0.95	0.00
tblVehicleEF	MDV	1.63	0.00
tblVehicleEF	MDV	434.99	0.00
tblVehicleEF	MDV	92.19	0.00
tblVehicleEF	MDV	0.08	0.00
tblVehicleEF	MDV	0.15	0.00
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	8.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.6370e-003	0.00
tblVehicleEF	MDV	2.3220e-003	0.00
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	1.5080e-003	0.00
tblVehicleEF	MDV	2.1350e-003	0.00
tblVehicleEF	MDV	0.15	0.01
tblVehicleEF	MDV	0.18	4.8880e-003
tblVehicleEF	MDV	0.14	5.2385e-003
tblVehicleEF	MDV	0.02	0.00
tblVehicleEF	MDV	0.09	0.00
tblVehicleEF	MDV	0.12	0.00

tblVehicleEF	MDV	4.3540e-003	0.00
tblVehicleEF	MDV	9.5000e-004	0.00
tblVehicleEF	MDV	0.15	0.01
tblVehicleEF	MDV	0.18	4.8880e-003
tblVehicleEF	MDV	0.14	5.2385e-003
tblVehicleEF	MDV	0.03	0.00
tblVehicleEF	MDV	0.09	0.00
tblVehicleEF	MDV	0.13	0.00
tblVehicleEF	MDV	6.3420e-003	0.00
tblVehicleEF	MDV	0.01	0.00
tblVehicleEF	MDV	0.77	0.00
tblVehicleEF	MDV	2.50	0.00
tblVehicleEF	MDV	394.72	0.00
tblVehicleEF	MDV	92.19	0.00
tblVehicleEF	MDV	0.10	0.00
tblVehicleEF	MDV	0.19	0.00
tblVehicleEF	MDV	0.04	0.04
tblVehicleEF	MDV	8.0000e-003	8.0000e-003
tblVehicleEF	MDV	1.6370e-003	0.00
tblVehicleEF	MDV	2.3220e-003	0.00
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	2.0000e-003	2.0000e-003
tblVehicleEF	MDV	1.5080e-003	0.00
tblVehicleEF	MDV	2.1350e-003	0.00
tblVehicleEF	MDV	0.02	1.4551e-004
tblVehicleEF	MDV	0.17	4.8880e-003
tblVehicleEF	MDV	0.03	1.7133e-005

tblVehicleEF	MDV	0.02	0.00
tblVehicleEF	MDV	0.11	0.00
tblVehicleEF	MDV	0.17	0.00
tblVehicleEF	MDV	3.9490e-003	0.00
tblVehicleEF	MDV	9.6500e-004	0.00
tblVehicleEF	MDV	0.02	1.4551e-004
tblVehicleEF	MDV	0.17	4.8880e-003
tblVehicleEF	MDV	0.03	1.7133e-005
tblVehicleEF	MDV	0.02	0.00
tblVehicleEF	MDV	0.11	0.00
tblVehicleEF	MDV	0.19	0.00
tblVehicleTrips	CC_TL	7.30	21.21
tblVehicleTrips	CNW_TL	7.30	21.21
tblVehicleTrips	CW_TL	9.50	21.21
tblVehicleTrips	ST_TR	1.68	5.80
tblVehicleTrips	SU_TR	1.68	5.80
tblVehicleTrips	WD_TR	1.68	5.80

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.7310	7.0353	5.8646	0.0141	0.7290	0.2973	1.0262	0.2745	0.2779	0.5525	0.0000	1,258.2074	1,258.2074	0.2041	0.0000	1,263.3107
2022	1.6401	0.3450	0.4190	8.1000e-004	0.0149	0.0161	0.0309	4.0100e-003	0.0150	0.0190	0.0000	71.7092	71.7092	0.0153	0.0000	72.0905
Maximum	**1.6401**	**7.0353**	**5.8646**	**0.0141**	**0.7290**	**0.2973**	**1.0262**	**0.2745**	**0.2779**	**0.5525**	**0.0000**	**1,258.2074**	**1,258.2074**	**0.2041**	**0.0000**	**1,263.3107**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.7310	7.0353	5.8646	0.0141	0.7290	0.2973	1.0262	0.2745	0.2779	0.5525	0.0000	1,258.2065	1,258.2065	0.2041	0.0000	1,263.3099
2022	1.6401	0.3450	0.4190	8.1000e-004	0.0149	0.0161	0.0309	4.0100e-003	0.0150	0.0190	0.0000	71.7092	71.7092	0.0153	0.0000	72.0904
Maximum	**1.6401**	**7.0353**	**5.8646**	**0.0141**	**0.7290**	**0.2973**	**1.0262**	**0.2745**	**0.2779**	**0.5525**	**0.0000**	**1,258.2065**	**1,258.2065**	**0.2041**	**0.0000**	**1,263.3099**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2021**	**3-31-2021**	2.5674	2.5674
2	**4-1-2021**	**6-30-2021**	1.7211	1.7211
3	**7-1-2021**	**9-30-2021**	1.7400	1.7400
4	**10-1-2021**	**12-31-2021**	1.7492	1.7492
5	**1-1-2022**	**3-31-2022**	1.9515	1.9515
		Highest	2.5674	2.5674

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4782	6.0000e-005	6.7100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0139
Energy	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	208.0375	208.0375	0.0188	4.2500e-003	209.7735
Mobile	0.1737	0.3697	4.6492	0.0219	5.1351	0.0172	5.1523	1.3694	0.0158	1.3852	0.0000	1,981.2097	1,981.2097	0.0261	0.0000	1,981.8612
Waste						0.0000	0.0000		0.0000	0.0000	63.1525	0.0000	63.1525	3.7322	0.0000	156.4577
Water						0.0000	0.0000		0.0000	0.0000	24.2816	54.4768	78.7584	2.4994	0.0600	159.1278
Total	**1.6544**	**0.3923**	**4.6748**	**0.0220**	**5.1351**	**0.0189**	**5.1540**	**1.3694**	**0.0176**	**1.3869**	**87.4341**	**2,243.7371**	**2,331.1712**	**6.2765**	**0.0643**	**2,507.2341**

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	1.4782	6.0000e-005	6.7100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0139
Energy	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	18.2979	18.2979	3.5000e-004	3.4000e-004	18.4066
Mobile	0.1737	0.3697	4.6492	0.0219	5.1351	0.0172	5.1523	1.3694	0.0158	1.3852	0.0000	1,981.2097	1,981.2097	0.0261	0.0000	1,981.8612
Waste						0.0000	0.0000		0.0000	0.0000	63.1525	0.0000	63.1525	3.7322	0.0000	156.4577
Water						0.0000	0.0000		0.0000	0.0000	24.2816	54.4768	78.7584	2.4994	0.0600	159.1278
Total	**1.6538**	**0.3866**	**4.6700**	**0.0220**	**5.1351**	**0.0185**	**5.1536**	**1.3694**	**0.0171**	**1.3865**	**87.4341**	**2,053.9974**	**2,141.4316**	**6.2581**	**0.0604**	**2,315.8673**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.04**	**1.46**	**0.10**	**0.18**	**0.00**	**2.27**	**0.01**	**0.00**	**2.45**	**0.03**	**0.00**	**8.46**	**8.14**	**0.29**	**6.08**	**7.63**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2021	1/21/2021	5	15	
2	Site Preparation	Site Preparation	1/22/2021	2/4/2021	5	10	
3	Grading	Grading	2/5/2021	3/8/2021	5	22	
4	Building Construction	Building Construction	3/9/2021	1/10/2022	5	220	
5	Paving	Paving	1/11/2022	2/2/2022	5	17	
6	Architectural Coating	Architectural Coating	2/3/2022	2/25/2022	5	17	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 9.22

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 496,461; Non-Residential Outdoor: 165,487; Striped Parking Area: 24,087 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

North Richmond Warehouse - Scenario 4 - 2027 - Contra Costa County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	2	8.00	81	0.73
Demolition	Excavators	6	8.00	158	0.38
Demolition	Rubber Tired Dozers	4	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	6	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	8	8.00	97	0.37
Grading	Excavators	4	8.00	158	0.38
Grading	Graders	2	8.00	187	0.41
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	4	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Cranes	2	7.00	231	0.29
Building Construction	Forklifts	6	8.00	89	0.20
Building Construction	Generator Sets	2	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	6	7.00	97	0.37
Building Construction	Welders	2	8.00	46	0.45
Paving	Pavers	4	8.00	130	0.42
Paving	Paving Equipment	4	8.00	132	0.36
Paving	Rollers	4	8.00	80	0.38
Architectural Coating	Air Compressors	2	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	12	15.00	0.00	60.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	14	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	16	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	18	308.00	120.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	12	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	2	62.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.5000e-003	0.0000	6.5000e-003	9.8000e-004	0.0000	9.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0012	51.0012	0.0144	0.0000	51.3601
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**6.5000e-003**	**0.0233**	**0.0298**	**9.8000e-004**	**0.0216**	**0.0226**	**0.0000**	**51.0012**	**51.0012**	**0.0144**	**0.0000**	**51.3601**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3000e-004	8.0300e-003	1.5900e-003	2.0000e-005	5.1000e-004	3.0000e-005	5.3000e-004	1.4000e-004	2.0000e-005	1.6000e-004	0.0000	2.2468	2.2468	1.0000e-004	0.0000	2.2492
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.5800e-003	1.0000e-005	8.9000e-004	1.0000e-005	9.0000e-004	2.4000e-004	1.0000e-005	2.4000e-004	0.0000	0.7550	0.7550	2.0000e-005	0.0000	0.7554
Total	**5.8000e-004**	**8.2700e-003**	**4.1700e-003**	**3.0000e-005**	**1.4000e-003**	**4.0000e-005**	**1.4300e-003**	**3.8000e-004**	**3.0000e-005**	**4.0000e-004**	**0.0000**	**3.0018**	**3.0018**	**1.2000e-004**	**0.0000**	**3.0047**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.5000e-003	0.0000	6.5000e-003	9.8000e-004	0.0000	9.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0475	0.4716	0.3235	5.8000e-004		0.0233	0.0233		0.0216	0.0216	0.0000	51.0011	51.0011	0.0144	0.0000	51.3600
Total	**0.0475**	**0.4716**	**0.3235**	**5.8000e-004**	**6.5000e-003**	**0.0233**	**0.0298**	**9.8000e-004**	**0.0216**	**0.0226**	**0.0000**	**51.0011**	**51.0011**	**0.0144**	**0.0000**	**51.3600**

3.2 Demolition - 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	2.3000e-004	8.0300e-003	1.5900e-003	2.0000e-005	5.1000e-004	3.0000e-005	5.3000e-004	1.4000e-004	2.0000e-005	1.6000e-004	0.0000	2.2468	2.2468	1.0000e-004	0.0000	2.2492
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5000e-004	2.4000e-004	2.5800e-003	1.0000e-005	8.9000e-004	1.0000e-005	9.0000e-004	2.4000e-004	1.0000e-005	2.4000e-004	0.0000	0.7550	0.7550	2.0000e-005	0.0000	0.7554
Total	**5.8000e-004**	**8.2700e-003**	**4.1700e-003**	**3.0000e-005**	**1.4000e-003**	**4.0000e-005**	**1.4300e-003**	**3.8000e-004**	**3.0000e-005**	**4.0000e-004**	**0.0000**	**3.0018**	**3.0018**	**1.2000e-004**	**0.0000**	**3.0047**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7061
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7061**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.9000e-004	2.0600e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6040	0.6040	1.0000e-005	0.0000	0.6044
Total	**2.8000e-004**	**1.9000e-004**	**2.0600e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6040**	**0.6040**	**1.0000e-005**	**0.0000**	**0.6044**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1807	0.0000	0.1807	0.0993	0.0000	0.0993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0389	0.4050	0.2115	3.8000e-004		0.0204	0.0204		0.0188	0.0188	0.0000	33.4357	33.4357	0.0108	0.0000	33.7060
Total	**0.0389**	**0.4050**	**0.2115**	**3.8000e-004**	**0.1807**	**0.0204**	**0.2011**	**0.0993**	**0.0188**	**0.1181**	**0.0000**	**33.4357**	**33.4357**	**0.0108**	**0.0000**	**33.7060**

3.3 Site Preparation - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	1.9000e-004	2.0600e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.6040	0.6040	1.0000e-005	0.0000	0.6044
Total	**2.8000e-004**	**1.9000e-004**	**2.0600e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6040**	**0.6040**	**1.0000e-005**	**0.0000**	**0.6044**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1921	0.0000	0.1921	0.0793	0.0000	0.0793	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0922	1.0208	0.6793	1.3600e-003		0.0437	0.0437		0.0402	0.0402	0.0000	119.8890	119.8890	0.0388	0.0000	120.8583
Total	**0.0922**	**1.0208**	**0.6793**	**1.3600e-003**	**0.1921**	**0.0437**	**0.2358**	**0.0793**	**0.0402**	**0.1195**	**0.0000**	**119.8890**	**119.8890**	**0.0388**	**0.0000**	**120.8583**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.8000e-004	5.0400e-003	2.0000e-005	1.7400e-003	1.0000e-005	1.7600e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.4765	1.4765	3.0000e-005	0.0000	1.4773
Total	**6.8000e-004**	**4.8000e-004**	**5.0400e-003**	**2.0000e-005**	**1.7400e-003**	**1.0000e-005**	**1.7600e-003**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**0.0000**	**1.4765**	**1.4765**	**3.0000e-005**	**0.0000**	**1.4773**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1921	0.0000	0.1921	0.0793	0.0000	0.0793	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0922	1.0208	0.6793	1.3600e-003		0.0437	0.0437		0.0402	0.0402	0.0000	119.8888	119.8888	0.0388	0.0000	120.8582
Total	**0.0922**	**1.0208**	**0.6793**	**1.3600e-003**	**0.1921**	**0.0437**	**0.2358**	**0.0793**	**0.0402**	**0.1195**	**0.0000**	**119.8888**	**119.8888**	**0.0388**	**0.0000**	**120.8582**

3.4 Grading - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	4.8000e-004	5.0400e-003	2.0000e-005	1.7400e-003	1.0000e-005	1.7600e-003	4.6000e-004	1.0000e-005	4.7000e-004	0.0000	1.4765	1.4765	3.0000e-005	0.0000	1.4773
Total	**6.8000e-004**	**4.8000e-004**	**5.0400e-003**	**2.0000e-005**	**1.7400e-003**	**1.0000e-005**	**1.7600e-003**	**4.6000e-004**	**1.0000e-005**	**4.7000e-004**	**0.0000**	**1.4765**	**1.4765**	**3.0000e-005**	**0.0000**	**1.4773**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4068	3.7305	3.5471	5.7600e-003		0.2051	0.2051		0.1929	0.1929	0.0000	495.7038	495.7038	0.1196	0.0000	498.6936
Total	**0.4068**	**3.7305**	**3.5471**	**5.7600e-003**		**0.2051**	**0.2051**		**0.1929**	**0.1929**	**0.0000**	**495.7038**	**495.7038**	**0.1196**	**0.0000**	**498.6936**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0420	1.3272	0.3372	3.4700e-003	0.0845	2.9800e-003	0.0874	0.0244	2.8500e-003	0.0273	0.0000	331.9198	331.9198	0.0154	0.0000	332.3051
Worker	0.1021	0.0713	0.7547	2.4500e-003	0.2614	1.7000e-003	0.2631	0.0695	1.5600e-003	0.0711	0.0000	221.1756	221.1756	5.0300e-003	0.0000	221.3013
Total	**0.1441**	**1.3985**	**1.0919**	**5.9200e-003**	**0.3458**	**4.6800e-003**	**0.3505**	**0.0939**	**4.4100e-003**	**0.0983**	**0.0000**	**553.0955**	**553.0955**	**0.0204**	**0.0000**	**553.6064**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4068	3.7305	3.5471	5.7600e-003		0.2051	0.2051		0.1929	0.1929	0.0000	495.7032	495.7032	0.1196	0.0000	498.6930
Total	**0.4068**	**3.7305**	**3.5471**	**5.7600e-003**		**0.2051**	**0.2051**		**0.1929**	**0.1929**	**0.0000**	**495.7032**	**495.7032**	**0.1196**	**0.0000**	**498.6930**

3.5 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0420	1.3272	0.3372	3.4700e-003	0.0845	2.9800e-003	0.0874	0.0244	2.8500e-003	0.0273	0.0000	331.9198	331.9198	0.0154	0.0000	332.3051
Worker	0.1021	0.0713	0.7547	2.4500e-003	0.2614	1.7000e-003	0.2631	0.0695	1.5600e-003	0.0711	0.0000	221.1756	221.1756	5.0300e-003	0.0000	221.3013
Total	**0.1441**	**1.3985**	**1.0919**	**5.9200e-003**	**0.3458**	**4.6800e-003**	**0.3505**	**0.0939**	**4.4100e-003**	**0.0983**	**0.0000**	**553.0955**	**553.0955**	**0.0204**	**0.0000**	**553.6064**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0102	0.0937	0.0982	1.6000e-004		4.8500e-003	4.8500e-003		4.5700e-003	4.5700e-003	0.0000	13.9035	13.9035	3.3300e-003	0.0000	13.9868
Total	**0.0102**	**0.0937**	**0.0982**	**1.6000e-004**		**4.8500e-003**	**4.8500e-003**		**4.5700e-003**	**4.5700e-003**	**0.0000**	**13.9035**	**13.9035**	**3.3300e-003**	**0.0000**	**13.9868**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-003	0.0352	8.8700e-003	1.0000e-004	2.3700e-003	7.0000e-005	2.4400e-003	6.8000e-004	7.0000e-005	7.5000e-004	0.0000	9.2180	9.2180	4.1000e-004	0.0000	9.2282
Worker	2.6600e-003	1.7900e-003	0.0194	7.0000e-005	7.3300e-003	5.0000e-005	7.3700e-003	1.9500e-003	4.0000e-005	1.9900e-003	0.0000	5.9709	5.9709	1.3000e-004	0.0000	5.9741
Total	**3.7600e-003**	**0.0369**	**0.0283**	**1.7000e-004**	**9.7000e-003**	**1.2000e-004**	**9.8100e-003**	**2.6300e-003**	**1.1000e-004**	**2.7400e-003**	**0.0000**	**15.1889**	**15.1889**	**5.4000e-004**	**0.0000**	**15.2023**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0102	0.0937	0.0982	1.6000e-004		4.8500e-003	4.8500e-003		4.5700e-003	4.5700e-003	0.0000	13.9035	13.9035	3.3300e-003	0.0000	13.9868
Total	**0.0102**	**0.0937**	**0.0982**	**1.6000e-004**		**4.8500e-003**	**4.8500e-003**		**4.5700e-003**	**4.5700e-003**	**0.0000**	**13.9035**	**13.9035**	**3.3300e-003**	**0.0000**	**13.9868**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-003	0.0352	8.8700e-003	1.0000e-004	2.3700e-003	7.0000e-005	2.4400e-003	6.8000e-004	7.0000e-005	7.5000e-004	0.0000	9.2180	9.2180	4.1000e-004	0.0000	9.2282
Worker	2.6600e-003	1.7900e-003	0.0194	7.0000e-005	7.3300e-003	5.0000e-005	7.3700e-003	1.9500e-003	4.0000e-005	1.9900e-003	0.0000	5.9709	5.9709	1.3000e-004	0.0000	5.9741
Total	**3.7600e-003**	**0.0369**	**0.0283**	**1.7000e-004**	**9.7000e-003**	**1.2000e-004**	**9.8100e-003**	**2.6300e-003**	**1.1000e-004**	**2.7400e-003**	**0.0000**	**15.1889**	**15.1889**	**5.4000e-004**	**0.0000**	**15.2023**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0188	0.1891	0.2479	3.9000e-004		9.6500e-003	9.6500e-003		8.8800e-003	8.8800e-003	0.0000	34.0469	34.0469	0.0110	0.0000	34.3221
Paving	0.0121					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0308**	**0.1891**	**0.2479**	**3.9000e-004**		**9.6500e-003**	**9.6500e-003**		**8.8800e-003**	**8.8800e-003**	**0.0000**	**34.0469**	**34.0469**	**0.0110**	**0.0000**	**34.3221**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.5000e-004	2.6800e-003	1.0000e-005	1.0100e-003	1.0000e-005	1.0200e-003	2.7000e-004	1.0000e-005	2.7000e-004	0.0000	0.8239	0.8239	2.0000e-005	0.0000	0.8244
Total	**3.7000e-004**	**2.5000e-004**	**2.6800e-003**	**1.0000e-005**	**1.0100e-003**	**1.0000e-005**	**1.0200e-003**	**2.7000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.8239**	**0.8239**	**2.0000e-005**	**0.0000**	**0.8244**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0188	0.1891	0.2479	3.9000e-004		9.6500e-003	9.6500e-003		8.8800e-003	8.8800e-003	0.0000	34.0468	34.0468	0.0110	0.0000	34.3221
Paving	0.0121					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0308**	**0.1891**	**0.2479**	**3.9000e-004**		**9.6500e-003**	**9.6500e-003**		**8.8800e-003**	**8.8800e-003**	**0.0000**	**34.0468**	**34.0468**	**0.0110**	**0.0000**	**34.3221**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7000e-004	2.5000e-004	2.6800e-003	1.0000e-005	1.0100e-003	1.0000e-005	1.0200e-003	2.7000e-004	1.0000e-005	2.7000e-004	0.0000	0.8239	0.8239	2.0000e-005	0.0000	0.8244
Total	**3.7000e-004**	**2.5000e-004**	**2.6800e-003**	**1.0000e-005**	**1.0100e-003**	**1.0000e-005**	**1.0200e-003**	**2.7000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.8239**	**0.8239**	**2.0000e-005**	**0.0000**	**0.8244**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5899					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4800e-003	0.0239	0.0308	5.0000e-005		1.3900e-003	1.3900e-003		1.3900e-003	1.3900e-003	0.0000	4.3405	4.3405	2.8000e-004	0.0000	4.3476
Total	**1.5934**	**0.0239**	**0.0308**	**5.0000e-005**		**1.3900e-003**	**1.3900e-003**		**1.3900e-003**	**1.3900e-003**	**0.0000**	**4.3405**	**4.3405**	**2.8000e-004**	**0.0000**	**4.3476**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.0200e-003	0.0111	4.0000e-005	4.1800e-003	3.0000e-005	4.2100e-003	1.1100e-003	2.0000e-005	1.1400e-003	0.0000	3.4055	3.4055	7.0000e-005	0.0000	3.4073
Total	**1.5200e-003**	**1.0200e-003**	**0.0111**	**4.0000e-005**	**4.1800e-003**	**3.0000e-005**	**4.2100e-003**	**1.1100e-003**	**2.0000e-005**	**1.1400e-003**	**0.0000**	**3.4055**	**3.4055**	**7.0000e-005**	**0.0000**	**3.4073**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5899					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4800e-003	0.0239	0.0308	5.0000e-005		1.3900e-003	1.3900e-003		1.3900e-003	1.3900e-003	0.0000	4.3405	4.3405	2.8000e-004	0.0000	4.3476
Total	**1.5934**	**0.0239**	**0.0308**	**5.0000e-005**		**1.3900e-003**	**1.3900e-003**		**1.3900e-003**	**1.3900e-003**	**0.0000**	**4.3405**	**4.3405**	**2.8000e-004**	**0.0000**	**4.3476**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.0200e-003	0.0111	4.0000e-005	4.1800e-003	3.0000e-005	4.2100e-003	1.1100e-003	2.0000e-005	1.1400e-003	0.0000	3.4055	3.4055	7.0000e-005	0.0000	3.4073
Total	**1.5200e-003**	**1.0200e-003**	**0.0111**	**4.0000e-005**	**4.1800e-003**	**3.0000e-005**	**4.2100e-003**	**1.1100e-003**	**2.0000e-005**	**1.1400e-003**	**0.0000**	**3.4055**	**3.4055**	**7.0000e-005**	**0.0000**	**3.4073**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1737	0.3697	4.6492	0.0219	5.1351	0.0172	5.1523	1.3694	0.0158	1.3852	0.0000	1,981.2097	1,981.2097	0.0261	0.0000	1,981.8612
Unmitigated	0.1737	0.3697	4.6492	0.0219	5.1351	0.0172	5.1523	1.3694	0.0158	1.3852	0.0000	1,981.2097	1,981.2097	0.0261	0.0000	1,981.8612

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,919.63	1,919.63	1919.63	13,822,079	13,822,079
Total	1,919.63	1,919.63	1,919.63	13,822,079	13,822,079

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	21.21	21.21	21.21	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.602053	0.035638	0.184509	0.111379	0.013262	0.004884	0.010800	0.025642	0.001653	0.001600	0.005187	0.002687	0.000705
Unrefrigerated Warehouse-No Rail	0.697900	0.000000	0.000000	0.218800	0.000000	0.000000	0.000000	0.083300	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	183.4873	183.4873	0.0184	3.8000e-003	185.0773
NaturalGas Mitigated	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	18.2979	18.2979	3.5000e-004	3.4000e-004	18.4066
NaturalGas Unmitigated	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5502	24.5502	4.7000e-004	4.5000e-004	24.6961

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	460054	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5502	24.5502	4.7000e-004	4.5000e-004	24.6961
Total		**2.4800e-003**	**0.0226**	**0.0189**	**1.4000e-004**		**1.7100e-003**	**1.7100e-003**		**1.7100e-003**	**1.7100e-003**	**0.0000**	**24.5502**	**24.5502**	**4.7000e-004**	**4.5000e-004**	**24.6961**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	342889	1.8500e-003	0.0168	0.0141	1.0000e-004		1.2800e-003	1.2800e-003		1.2800e-003	1.2800e-003	0.0000	18.2979	18.2979	3.5000e-004	3.4000e-004	18.4066
Total		**1.8500e-003**	**0.0168**	**0.0141**	**1.0000e-004**		**1.2800e-003**	**1.2800e-003**		**1.2800e-003**	**1.2800e-003**	**0.0000**	**18.2979**	**18.2979**	**3.5000e-004**	**3.4000e-004**	**18.4066**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	140506	18.4824	1.8500e-003	3.8000e-004	18.6426
Unrefrigerated Warehouse-No Rail	1.25439e+006	165.0049	0.0165	3.4100e-003	166.4348
Total		**183.4873**	**0.0184**	**3.7900e-003**	**185.0773**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.4782	6.0000e-005	6.7100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0139
Unmitigated	1.4782	6.0000e-005	6.7100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0139

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	0.1590					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3186					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.2000e-004	6.0000e-005	6.7100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0139
Total	**1.4782**	**6.0000e-005**	**6.7100e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0131**	**0.0131**	**3.0000e-005**	**0.0000**	**0.0139**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1590					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3186					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.2000e-004	6.0000e-005	6.7100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0131	0.0131	3.0000e-005	0.0000	0.0139
Total	**1.4782**	**6.0000e-005**	**6.7100e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0131**	**0.0131**	**3.0000e-005**	**0.0000**	**0.0139**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	78.7584	2.4994	0.0600	159.1278
Unmitigated	78.7584	2.4994	0.0600	159.1278

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	76.5368 / 0	78.7584	2.4994	0.0600	159.1278
Total		**78.7584**	**2.4994**	**0.0600**	**159.1278**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	76.5368 / 0	78.7584	2.4994	0.0600	159.1278
Total		**78.7584**	**2.4994**	**0.0600**	**159.1278**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	63.1525	3.7322	0.0000	156.4577
Unmitigated	63.1525	3.7322	0.0000	156.4577

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	311.11	63.1525	3.7322	0.0000	156.4577
Total		**63.1525**	**3.7322**	**0.0000**	**156.4577**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	311.11	63.1525	3.7322	0.0000	156.4577
Total		**63.1525**	**3.7322**	**0.0000**	**156.4577**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation