APPENDIX C.
AIR QUALITY MODELING TECHNICAL DATA

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Air Quality Impact Analysis

Wilson Creek Estates
City of Yucaipa, California

Prepared for
The City of Yucaipa

AECOM Project # 29875583
February 2016

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LIST OF ACRONYMS

AB	Assembly Bill
AMSL	above mean sea level
AQIA	Air Quality Impact Analysis
AQMP	Air Quality Management Plan
Ar	argon
APS	Alternative Planning Strategy
°C	degrees Celsius
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CAP	Climate Action Plan
CARB	California Air Resources Board
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
EPA	U.S. Environmental Protection Agency
°F	degrees Fahrenheit
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
lbs./day	pounds per day
LCFS	low-carbon fuel standard
LOS	Level of Service
LST	Localized Significance Threshold
$\mu g/m^3$	micrograms per cubic meter
MPO	Metropolitan Planning Organization
MT	metric ton
N2	nitrogen
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide
NO_X	nitrogen oxides

O_2	oxygen
PFC	perfluorocarbon
PM	particulate matter
PM_{10}	particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
ppm	parts per million
RTP	Regional Transportation Plan
SANBAG	San Bernardino Association of Governments
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SF_6	sulfur hexafluoride
SO_2	sulfur dioxide
SO_X	sulfur oxides
SRA	Source/Receptor Area
TAC	toxic air contaminant
USDOT	U.S. Department of Transportation
VOC	volatile organic compound
WRCC	Western Regional Climate Center

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EXECUTIVE SUMMARY

Background

This Air Quality Impact Analysis examines the degree to which the proposed Wilson Creek Estates ("project") may result in significant adverse changes in air quality. The project consists of the development of residential land uses on approximately 236 acres in the City of Yucaipa, County of San Bernardino, California. The project site is bounded by Fir Avenue to the north, Oak Glen Road to the south, and Jefferson Street and Cherry Croft Drive to the west. The project site consists of a Phased Tentative Tract Map to subdivide the land into 184 single-family lots each with a minimum lot size of one gross acre, with two additional "Not a Part" lots for an existing private residence (Casa Blanca Ranch) and water tank/pump station site owned and operated by the Yucaipa Valley Water District.

Results

The project's emissions were evaluated against significance thresholds established by the South Coast Air Quality Management District (SCAQMD) and the City of Yucaipa. The project's emissions were assessed for both localized and regional impacts for the construction and operations phases of the project.

Construction

The analysis of potential impacts from construction emissions to regional air quality found that project emissions would not exceed the SCAQMD regional or localized thresholds for any pollutants. The project's construction emissions would result in less than significant impacts to air quality local to the project site.

Operations

The project was evaluated for potential impacts to regional and local air quality. The regional air quality analysis found that less than significant air quality impacts would occur for nitrogen oxides, carbon monoxide (CO), sulfur dioxide, particulate matter less than 10 microns, and particulate matter less than 2.5 microns but would generate volatile organic compound (VOC) emissions that exceed the SCAQMD threshold of significance. This exceedance is primarily due to hearth emissions from fireplaces at the proposed residences. Localized impacts were evaluated for CO hotspots at intersections. The screening analysis found that emission concentrations would not result in a CO hotspot. Odors would likewise result in less than significant impacts to air quality. The project was also evaluated for cumulative contributions to climate change. The project would result in greenhouse gas (GHG) emissions that exceed the SCAQMD and City of Yucaipa significance threshold for residential uses. The project would also result in a significant impact to climate change. Since the details of development are not available at the time of this analysis, the project would not be consistent with the goals and

strategies of the City of Yucaipa Climate Action Plan (CAP). Mitigation measures are required to reduce significant impacts associated with GHG emissions and global climate change.

Mitigation Measures

In an effort to reduce the air quality impacts from operation of the project, the following mitigation measure will be implemented for the operational phases of the project.

GHG-1 As a condition of approval prior to issuing building permits, development proposals shall be required to demonstrate that the project would garner at least 100 points from the Screening Tables for residential projects in the City of Yucaipa CAP. The point values correspond to the minimum emissions reduction expected from each feature. The menu of features allows maximum flexibility and options for how development projects can implement the GHG reduction measures.

Conclusion

With implementation of the mitigation measures listed above, GHG emissions from project operations do not exceed the significance thresholds established by SCAQMD. However, the operational phase would continue to result in exceedances of the SCAQMD threshold for VOCs and would result in an unavoidable adverse impact to air quality. Therefore, air quality impacts from the project are considered significant and unavoidable.

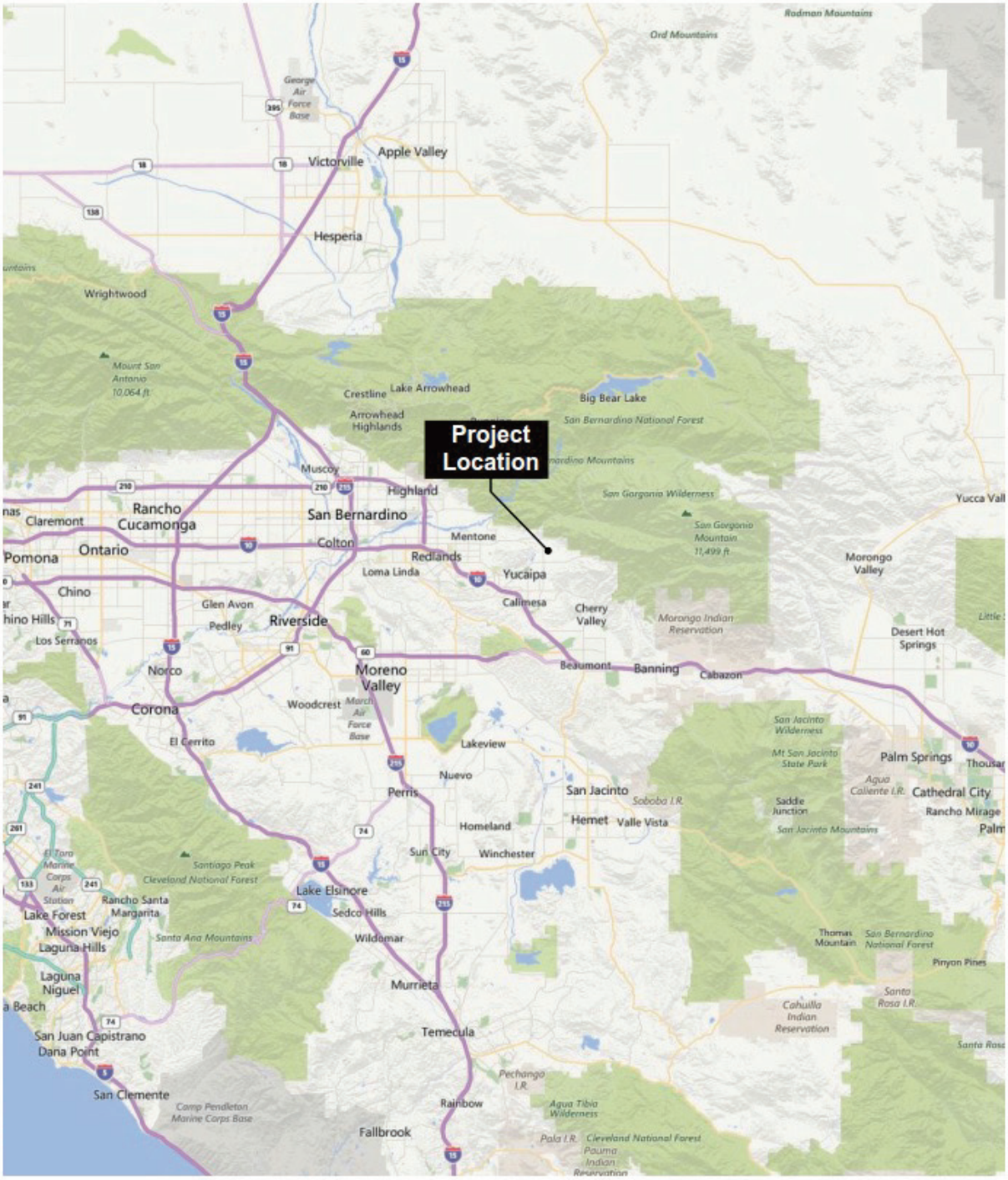
1.0 INTRODUCTION

The proposed Wilson Creek Estates ("project") is located on approximately 236 acres in the City of Yucaipa, County of San Bernardino, California. The project site is bound by Fir Avenue to the north, Oak Glen Road to the south, and Jefferson Street and Cherry Croft Drive to the west. The project site consists of a Phased Tentative Tract Map to subdivide the land into 184 single-family lots each with a minimum lot size of one gross acre, with two additional "Not a Part" lots for an existing private residence (Casa Blanca Ranch) and water tank/pump station site owned and operated by the Yucaipa Valley Water District. .

The project site is in the South Coast Air Basin, which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). Figure 1 shows the project location.

1.1 PURPOSE OF AIR QUALITY IMPACT ANALYSIS

The purpose of the Air Quality Impact Analysis (AQIA) is to provide information about the potential air quality impacts related to construction and operation of the project. The analysis methodology is based primarily on SCAQMD's *CEQA Air Quality Analysis Handbook*.



REGIONAL VICINITY MAP

AECOM

WILSON CREEK ESTATES PROJECT

FIGURE NO. 1

2.0 BACKGROUND

2.1 PROJECT SETTING

The project site is located north of Oak Glen Road and east of Jefferson Street, in the City of Yucaipa, County of San Bernardino, California (Figure 1). The property is currently improved with a vacant ranch that includes hilltops and canyons used for agricultural purposes. Several farm-related structures exist on the project site, including a ranch house and other small habitable buildings, as well as structures used for storage, workshop, and packing purposes. The surrounding properties include vacant lands to the north and east as well as residential uses to the west and south of the project site.

2.2 CLIMATE AND METEOROLOGY OF THE SOUTH COAST AIR BASIN

The project site is located in the South Coast Air Basin that includes Orange, Los Angeles (non-desert portions), Riverside (non-desert portion), and San Bernardino (non-desert portion) Counties.

Meteorological (short-term) and climatological (long-term) conditions influence ambient air quality. The South Coast Air Basin both transports to and receives air pollutants from the coastal portions of Ventura and Santa Barbara Counties. The South Coast Air Basin also receives air pollutants from oil and gas development operations on the outer continental shelf in Santa Monica Bay and the San Pedro Channel.

Temperatures for the area are markedly higher during the summer months. The monthly climate summary is used from the nearest meteorological station, the Western Regional Climate Center (WRCC) #047306 at Redlands, located approximately 8 miles west of the project area. The average maximum temperature was 94.3 degrees Fahrenheit (°F) in July, with an average minimum temperature of 39.4°F in January (WRCC 2015). The average annual temperature is 63.7°F.

During the winter months, a semipermanent, subtropical high-pressure system over the eastern Pacific Ocean moves south, allowing frontal systems that normally are blocked and forced to the north of the area to pass through the region. This results in most of the area's annual precipitation, which totals about 13.56 inches. Average maximum rainfall occurs in January (i.e., 2.68 inches), with minimum rainfall in July (i.e., 0.07 inches) (WRCC 2015).

On occasion during fall and winter months, a high-pressure system develops over Nevada and Utah and pushes air south and southwestward over the San Gabriel and San Bernardino Mountains. The resulting wind is known as a Santa Ana wind. Santa Ana winds, usually warm and dry, can be very strong, with wind speeds through mountain passes sometimes exceeding 62 miles per hour. They tend to clear the South Coast Air Basin of accumulated air pollutants but can also cause dust storms and high particulate levels.

The topographical features in the region around the project area restrict air movement through and out of the valley (especially in the northern portion). The San Gabriel and Santa Ana Mountains hinder wind access into the valley from the northwest, north, west, and southwest; the Agua Tibia range hinders winds from the south; and the San Bernardino and San Jacinto Mountains are significant barriers to the northeast, east, and southeast, causing a weak air flow through the valley. This weak air flow is also frequently blocked vertically by temperature inversions.

2.3 TEMPERATURE INVERSION

Air pollutants depend on buoyant forces (the polluted air being warmer than the surrounding atmosphere) enabling it to rise and disperse. When cool air flows into the South Coast Air Basin from the ocean, it sinks, pushes the warm air up, and creates a subsidence temperature inversion (i.e., atmospheric temperature increases with elevation). Subsidence inversions occur during warmer summer months. As the cooler ocean air absorbs pollutants and begins to rise, it becomes “trapped” by the warm air above and settles back into the Basin. As the sun warms the ground, the temperature of the lower atmosphere approaches the temperature of the base of the inversion (upper) layer and eventually becomes warmer than the warm air above, causing the inversion layer to finally break, and allowing vertical mixing within both layers. This phenomenon is observed from early to late afternoons on hot summer days, when the smog appears to suddenly clear up. Until the inversion breaks, the stagnant conditions can lead to high ground-level pollutant concentrations.

During evenings, mainly in the cooler winter months, surface or radiation inversions are formed when the ground surface becomes cooler than the air above it. The earth’s surface undergoes such a process on clear nights with low wind speeds when heat energy is transferred from the ground to the cooler night sky. As the earth’s surface cools during the evening hours, the air directly above it also cools, but the atmosphere at higher altitudes remains relatively warm. This type of inversion persists until sunrise when heat from the sun warms the ground and stimulates the air at ground level to break up the inversion. During winter months, these radiation temperature inversions usually break by mid-morning.

Temperature inversions play a significant role in determining ozone formation. Ozone precursors, nitrogen oxides (NO_X) and volatile organic compounds (VOCs), will mix and undergo photochemical reactions to produce smog. Temperature inversions close to the ground will keep high concentrations of ozone precursors in an area, allow the chemical reactions to take place in the presence of abundant sunlight and, hence, create ground-level ozone. Concentration levels of ozone are directly related to inversion layer heights due to the limitation of the vertical mixing space.

On days with no temperature inversion or when high velocity winds are present, the concentration of air pollutants is generally lower. Conversely, during days of temperature inversion or when low wind speeds are present, air pollutants generated in the urbanized areas of the Basin are transported into Riverside and San Bernardino Counties and frequently create

the highest concentrations. Summer wind flow patterns represent worst-case conditions, as this is the period of higher temperatures, generally lower wind speeds, and more sunlight, which result in ozone formation.

2.4 PREDOMINANT AIR POLLUTANTS IN THE SOUTH COAST AIR BASIN AND AMBIENT MONITORING CONCENTRATIONS IN THE PROJECT VICINITY

The pollutants of greatest importance in the South Coast Air Basin are described in this section. Included are a description of the physical properties, the health and other effects of the pollutant, the sources of the pollutant, and the ambient air quality standards that have been developed to limit their exposure to the public.

Six air pollutants have been identified by the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) as being of concern on a nationwide level and a statewide level: ozone; carbon monoxide (CO); nitrogen dioxide (NO_2); sulfur dioxide (SO_2); lead; and particulate matter (PM), which is subdivided into two classes based on particle size: PM equal to or less than 10 micrometers in diameter (PM_{10}) and PM equal to or less than 2.5 micrometers in diameter ($PM_{2.5}$). Because the air quality standards for these air pollutants are regulated using human health and environmentally based criteria, they are commonly referred to as “criteria air pollutants.”

Health-based air quality standards were established for these criteria pollutants by EPA at the national level and by CARB at the state level. These standards were established to protect the public with a margin of safety from adverse health impacts due to exposure to air pollution. These National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) are reviewed on a legally prescribed frequency and revised as new health and welfare effects data warrant. Each standard is based on a specific averaging time over which the concentration is measured. Different averaging times are based upon protection of short-term, high dosage effects or longer-term, low dosage effects. NAAQS may be exceeded no more than once per year; CAAQS are not to be exceeded. Table 2-1 presents the NAAQS and the CAAQS.

Permanent air monitoring stations are placed in strategic locations to collect ambient criteria air pollutant concentration data. The project site is located within the East San Bernardino Valley portion of Source/Receptor Area (SRA) 35 (East San Bernardino Valley). CO, $PM_{2.5}$ and NO_2 are not monitored at the East San Bernardino Valley station; therefore, data from the Central San Bernardino Valley station are provided. The communities within a given SRA are expected to have similar climatology. Table 2-2 presents the most recent data over the past 3 years from the monitoring stations as summaries of the highest pollutant levels recorded for years 2012 through 2014. These concentrations represent the existing, or baseline conditions, for the project, based on the most recent information available.

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Table 2-1, Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [a]	National Standards [b]	
		Concentration [c]	Primary [c,d]	Secondary [c,e]
Ozone	1 hour	0.09 ppm (180 μg/m^3)	–	Same as primary standard
	8 hours	0.070 ppm (137 μg/m^3)	0.070 ppm (147 μg/m^3)	
Respirable particulate matter (PM_{10})[f]	24 hours	50 μg/m^3	150 μg/m^3	Same as primary standard
	Annual arithmetic mean	20 μg/m^3	–	
Fine particulate matter ($PM_{2.5}$)[f]	24 hours	–	35 μg/m^3	Same as primary standard
	Annual arithmetic mean	12 μg/m^3	12 μg/m^3	15 μg/m
Carbon monoxide (CO)	8 hours	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	None
	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
	8 hours (Lake Tahoe)	6 ppm (7 mg/m^3)	–	–
Nitrogen dioxide (NO_2)[g]	Annual arithmetic mean	0.030 ppm (57 μg/m^3)	0.053 ppm (100 μg/m^3)	Same as primary standard
	1 hour	0.18 ppm (339 μg/m^3)	100 ppb (188 μg/m^3)	None
Sulfur dioxide (SO_2)[h]	Annual Arithmetic Mean	–	0.030 ppm (for certain areas)[h]	–
	24 hours	0.04 ppm (105 μg/m^3)	0.14 ppm (for certain areas)[h]	–
	3 hours	—	–	0.5 ppm (1,300 μg/m^3)
	1 hour	0.25 ppm (655 μg/m^3)	75 ppb (196 μg/m^3)	–
Lead [i,j]	30-day average	1.5 μg/m^3	–	–
	Calendar quarter	–	1.5 μg/m^3 (for certain areas)[j]	Same as primary standard
	Rolling 3-month average	–	0.15 μg/m^3	
Visibility-reducing particles [k]	8 hours	See footnote j	No national standards	
Sulfates	24 hours	25 μg/m^3		
Hydrogen sulfide	1 hour	0.03 ppm (42 μg/m^3)		
Vinyl chloride [i]	24 hours	0.01 ppm (26 μg/m^3)		

Notes: mg/m^3 = milligrams per cubic meter; ppb = parts per billion; ppm = parts per million; μg/m^3 = micrograms per cubic meter

[a] California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, 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.

[b] 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 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standards.

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

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

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

[f] On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 μg/m3 to 12.0 μg/m3. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 μg/m3, as was the annual secondary standard of 15 μg/m3. The existing 24-hour PM10 standards (primary and secondary) of 150 μg/m3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

[g] 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. California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards the units can be converted from 100 ppb to 0.100 ppm.

[h] 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 1 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. 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 of 0.075 ppm.

[i] 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.

[j] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 μg/m^3 as a quarterly average) remains in effect until 1 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 standards are approved.

[k] In 1989, 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 the “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.

Source: CARB 2015a

Table 1-2, Ambient Air Quality Monitoring Summary

Pollutant/Standard	Number of Days Threshold was Exceeded and Maximum Levels during Such Violations		
	2012	2013	2014
Ozone			
State 1-Hour > 0.09 ppm	41	22	38
State 8-hour >0.07 ppm	77	53	76
Federal 1-Hour >0.12 ppm	0	2	0
Federal 8-Hour >0.07 ppm	54	36	51
Max. 1-Hour Conc. (ppm)	0.124	0.139	0.121
Max. 8-Hour Conc. (ppm)	0.109	0.112	0.099
Carbon Monoxide			
State 1-Hour >20 ppm	0	0	0
State 8-Hour >9.0 ppm	0	0	0
Federal 8-Hour >9 ppm	0	0	0
Max 1-Hour Conc. (ppm)	NM	NM	NM
Max. 8-Hour Conc. (ppm)	1.64	NM	NM
Nitrogen Dioxide			
Annual Average (ppb)	NM	NM	18
Max. 1-Hour Conc. (ppb)	67	72	72
Inhalable Coarse Particulates (PM_{10})			
State 24-Hour >50 µg/m3	1	2	2
Federal 24-Hour >150 µg/m3	0	1	1
Max. 24-Hour Conc. (µg/m3)	68.1	177.3	157.2
Inhalable Fine Particulates ($PM_{2.5}$)			
Federal 24-Hour >35 µg/m3	0	1	1
Max. 24-Hour Conc. (µg/m3)	34.8	55.3	73.9

NM – Not monitored.
ppm: parts per million; µg/m^3: micrograms per cubic meter
Source: CARB 2015b

2.4.1 Ozone

Ozone (is the main component of photochemical smog. Ozone is a principal cause of lung and eye irritation in an urban environment. It is formed in the atmosphere through a series of reactions involving hydrocarbons and NO_x in the presence of sunlight.

Table 2-2 shows that the federal 8-hour ozone NAAQS of 0.07 parts per million (ppm) has been exceeded from 36 to 54 times within the last 3 years at the East San Bernardino Valley monitoring station. The highest 8-hour concentration was 0.112 ppm in 2013. The data presented in the table show that the CAAQS 1-hour average also exceeded the 0.09 ppm standard during each of the last 3 monitored years.

2.4.2 Particulate Matter

PM includes both aerosols and solid particles of a wide range of size and composition. Of particular concern are those particles 10 microns and smaller (i.e., PM_{10}) and particles less than or equal to 2.5 microns (i.e., $PM_{2.5}$). The size of the PM is referenced to the aerodynamic

diameter of the particulate. The principal health effect of airborne PM is on the respiratory system. Particulates in the air are caused by a combination of:

- Windblown fugitive dust or road dust;
- Particles emitted from combustion sources (usually carbon particles); and
- Organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons and sulfur oxides (SO_X), and NO_X.

As previously discussed, EPA groups PM into two categories, which are described below.

2.4.2.1 Particulate Matter Less Than or Equal to 10 Microns

PM with a diameter equal to or less than 10 microns is referred to as PM_{10}. This size allows PM_{10} to easily enter the lungs contributing to increased respiratory disease, lung damage, cancer, and premature death. PM_{10} can also contribute to reduced visibility. In 1987, EPA adopted standards for PM_{10} and phased out the total suspended particulate standards previously in effect.

Background PM_{10} data for the Southwest San Bernardino Valley Station are provided in Table 2-2. The PM_{10} data show that the 24-hour average CAAQS of 50 micrograms per cubic meter (µg/m^3) is consistently exceeded at the east San Bernardino Valley Station (between 1 to 2 days per year, with a maximum concentration of 177 µg/m^3 in 2013). In the past 3 years, the 24-hour average PM_{10} NAAQS of 150 µg/m^3 was exceeded once in 2013 and once in 2014.

2.4.2.2 Particulate Matter Less Than or Equal to 2.5 Microns

Fine particulates are referred to as $PM_{2.5}$, having a diameter equal to or less than 2.5 microns. The potential adverse health effects are the same as PM_{10}, except these particles can enter deeper into the lungs and cause greater lung impairment, especially in at-risk individuals.

The $PM_{2.5}$ data in Table 2-2 show that the 24-hour average (98th percentile) NAAQS of 35 µg/m$_3$ was exceeded once in 2013 and once in 2014. The 98th percentile maximum 24-hour $PM_{2.5}$ background concentration of 73.9 µg/m^3 was measured in 2014.

2.4.3 Carbon Monoxide

CO is a colorless and odorless gas, which in the urban environment is associated primarily with the incomplete combustion of fossil fuels in motor vehicles. Peak CO levels occur typically during winter months, due to a combination of higher emission rates and stagnant weather conditions. CO combines with hemoglobin in the bloodstream and reduces the amount of oxygen that can be circulated through the body. High CO concentrations can lead to headaches, aggravation of cardiovascular disease, and impairment of central nervous system functions. CO concentrations can vary greatly over comparatively short distances. Relatively high concentrations are typically found at or near ground level near crowded intersections along

heavily used roadways carrying slow-moving traffic. Even under the most severe meteorological and traffic conditions, high concentrations of CO are limited to locations within a relatively short distance of heavily traveled roadways.

The data in Table 2-2- present CO averages for the Northwest San Bernardino Valley Station. The table indicates that 1-hour maximum CO levels comply with the NAAQS and CAAQS. These standards have not been exceeded at the station in the last 3 years. The maximum NAAQS and CAAQS 1-hour concentrations were not exceeded. The data in Table 2-2 also show that 8-hour maximum CO levels do not exceed the NAAQS and CAAQS of 9.0 ppm. The maximum 8-hour concentration was 1.64 ppm, occurring in 2012. Due to the low concentrations of CO, local air pollutant monitoring stations in the vicinity of the project have stopped measurements of CO.

2.4.4 Nitrogen Oxides

NO_x emissions from vehicular sources are some of the precursors in the formation of ozone and secondary PM. Ozone and PM are formed through a series of photochemical reactions in the atmosphere. Because the reactions are slow and occur as the pollutants are diffusing downwind, elevated ozone levels are often found many miles from the source of precursor emissions. NO_X and the corresponding ground-level ozone can provoke lung irritation and lung damage.

NO_X emissions are primarily generated from the combustion of fuels. NO_X include nitric oxide (NO) and nitrogen dioxide (NO_2). Because NO converts to NO_2 in the atmosphere over time and $NO_2$is the more toxic of the two, it is the listed criteria pollutant. Background NO_2 data from the Northwest San Bernardino Valley Station are provided in Table 2-2. The NAAQS of 0.05 ppm has not been exceeded in the project area in the last 3 years. The maximum annual concentration was 0.0177 ppm in 2013. The data in the table also show that maximum 1-hour average NO_2 levels comply with the CAAQS of 0.030 ppm. This limit has not been exceeded in the project area in the last 3 years.

2.4.5 Sulfur Oxides and Sulfur Dioxide

SO_X constitute a class of compounds, of which SO_2 is of greatest importance. The oxides are formed during combustion of the sulfur components in motor fuels. Relatively few SO_X are generated from motor vehicles, since motor fuels are now de-sulfured. The health effects of SO_X include respiratory illness, damage to the respiratory tract, and bronchia constriction. SO_X are also emitted by chemical plants that treat or refine sulfur or sulfur-containing chemicals. Natural gas contains trace amounts of sulfur, while fuel oils and coal contain much larger amounts. SO_X react in the atmosphere to form acid rain, which is destructive to crops and vegetation, as well as to buildings, materials, and works of art. Historical data show that SO_X levels in the South Coast Air Basin have been lower than the standard for many years.

2.4.6 Lead

Lead is a stable compound, which persists and accumulates both in the environment and in animals. In humans, it affects the blood-forming system, and the nervous and renal systems. In addition, lead has been shown to affect the normal functions of the reproductive, endocrine, hepatic, cardiovascular, immunological, and gastrointestinal systems, although there is significant individual variability in response to lead exposure. Since 1975, lead emissions have been in decline, due in part to the introduction of catalyst-equipped vehicles, and less production of leaded gasoline. In general, an analysis of lead is limited to projects that emit significant quantities of the pollutant (i.e., lead smelters) and is generally not applied to projects that primarily generate vehicle trips (e.g. residential projects). Lead gasoline additives, nonferrous smelters, and battery plants were the most significant contributors to atmospheric lead emissions. Legislation in the early 1970s required gradual reduction of the lead content of gasoline over a period of time, which has dramatically reduced lead emissions from mobile and other combustion sources. In addition, unleaded gasoline was introduced in 1975; combined, these controls have essentially eliminated violations of the lead standard for ambient air in urban areas.

Federal lead standards are based on a calendar quarterly averaging time, not to exceed 1.5 $\mu g/m^3$. The state standard is based on a monthly average of 1.5 $\mu g/m^3$. Historical data show that lead levels in the Basin are, and have been, below the standard for many years.

2.4.7 Particulate Sulfates

Particulate sulfates are the product of further oxidation of SO_2. Sulfate compounds consist of primary and secondary particles. Primary sulfate particles are directly emitted from open pit mines, dry lakebeds, and desert soils. Fuel combustion is another source of sulfates, both primary and secondary. Secondary sulfate particles are produced when SO_X emissions are transformed into particles through physical and chemical processes in the atmosphere. These particles are small and can be transported long distances.

The 24-hour average CAAQS for sulfates is 25 $\mu g/m^3$. There is no federal standard for sulfates. Historical levels of sulfates for the project area show that sulfate levels have been well below state standards for the past 5 years.

2.4.8 Other State-Designated Criteria Pollutants

In addition to the federal criteria pollutants, California has designated hydrogen sulfide and visibility-reducing particles as criteria pollutants. California is designated as unclassified for visibility-reducing particles, and the Basin is designated as unclassified for hydrogen sulfide.

2.5 ATTAINMENT STATUS FOR THE SOUTH COAST AIR BASIN

Both EPA and CARB use ambient air quality monitoring data to designate areas according to their attainment status for criteria air pollutants. The purpose of these designations is to identify the areas with air quality problems and initiate planning efforts for improvement. Areas are

classified as attainment or nonattainment areas for particular pollutants, depending on whether they meet ambient air quality standards for that pollutant. Severity classifications for ozone nonattainment range in magnitude from marginal, moderate, and serious to severe and extreme. Attainment classifications apply to individual pollutants:

- Unclassified: the data are incomplete and do not support a designation of attainment or nonattainment for a pollutant;
- Attainment: the CAAQS were not violated at any site in the area during a 3-year period for that pollutant; and
- Nonattainment: at least one violation of a CAAQS occurred for that pollutant in the area.
-

The attainment status for the South Coast Air Basin is listed in Table 2-3. The South Coast Air Basin is also designated as attainment for SO_2, lead, CO, visibility-reducing particles, and sulfates. The project would be located in an area that is nonattainment for the 1-hour and 8-hour ozone state standards and extreme nonattainment for the 8-hour ozone federal standards. The project area is designated as nonattainment for the PM_{10} NAAQS. The South Coast Air Basin has been designated as nonattainment for $PM_{2.5}$.

Table 2-3, Designations of Criteria Pollutants for the South Coast Air Basin

Pollutant	Federal	State
Ozone (1-hour)	Not Applicable	Nonattainment
Ozone (8-hour)	Extreme Nonattainment (for 2008 standard) Designation Pending (for 2015 standard)	Nonattainment
NO_2 (annual)	Attainment (Maintenance)	Attainment
NO_2 (1-hour)	Unclassifiable/Attainment	Attainment
CO	Attainment (Maintenance)	Attainment
PM_{10} (annual)	not applicable	Nonattainment
PM_{10} (24-hour)	Attainment (Maintenance)	Nonattainment
$PM_{2.5}$ (annual)	Nonattainment (for 1997 standard) Serious Nonattainment (for 2012 standard)	Nonattainment
$PM_{2.5}$ (24-hour)	Serious Nonattainment (for 2006 standard)	Nonattainment
Lead	Attainment	Attainment
SO_2	Designations Pending (expect Unclassifiable/Attainment)	Unclassifiable/Attainment

Source: CARB 2015c

2.6 GREENHOUSE GAS EMISSIONS

Earth's global climate has continuously changed, as evidenced by extremes in global climate over the last 500,000 years. Global climate change refers to changes in climatological characteristics that occur across Earth as a whole, such as temperature, wind patterns, precipitation, and storms. Global temperatures are affected by naturally occurring greenhouse gases (GHGs). These gases allow sunlight into Earth's atmosphere, but inhibit radiative heat from escaping into outer space, thus altering Earth's energy balance by retaining that heat. This phenomenon is often referred to as the "greenhouse effect."

Climate change as it is currently used refers to the change in temperature in Earth's climate over time, whether due to natural variability or as a result of human activities. The climate system is interactive and dynamic, consisting of five major components: the atmosphere, the hydrosphere (ocean, rivers, and lakes), the cryosphere (sea ice, ice sheets, and glaciers), the land surface, and the biosphere (flora and fauna). The atmosphere is the most unstable and rapidly changing part of the system. It is consists of 78.1 percent nitrogen (N_2), 20.9 percent oxygen (O_2), and 0.93 percent argon (Ar). These gases have only limited interaction with the incoming solar radiation and do not interact with infrared (long-wave) radiation emitted by Earth. However, a number of trace gases, such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone, absorb and emit infrared radiation (heat) and therefore have an effect on climate. These are GHGs, and while they comprise less than 0.1 percent of the total volume mixing ratio in dry air, they play an essential role in influencing climate (IPCC 2001).

The following are the principal GHG pollutants that contribute to climate change:

- Carbon Dioxide: CO_2 is a colorless, odorless gas at standard temperature. Atmospheric concentrations of CO_2 fluctuate slightly with the change of the seasons and are more predominant in the winter months. CO_2 enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and as a result of other chemical reactions.
- Methane: CH_4 is a colorless, odorless gas at standard temperature. It is the principal component of natural gas. CH_4 is extremely reactive with oxidizers, halogens, and other halogen-containing compounds.. CH_4 is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- Nitrous Oxide: N_2O is a colorless nonflammable gas, with an odor and taste described as slightly sweet. N_2O is produced by both natural and human-related sources. Primary human-related sources of N_2O are agricultural soil management, sewage treatment, and mobile and stationary combustion of fossil fuel. N_2O is also produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests.

- Fluorinated gases are synthetic, strong GHGs emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances. These gases include:
    - Perfluorocarbons (PFCs) are a group of human-made chemicals composed of carbon and fluorine only. These chemicals were introduced as alternatives, along with hydrofluorocarbons (HFCs), to ozone-depleting substances. In addition, PFCs are emitted as by-products of industrial processes and are also used in manufacturing. Sulfur hexafluoride (SF_6) is a colorless gas soluble in alcohol and ether, and slightly soluble in water. SF_6 is a strong GHG used primarily as an insulator in electrical transmission and distribution systems.
    - HFCs contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing.

Global warming potential (GWP) is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to CO_2. The GWP of a GHG is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time (i.e., lifetime) that the gas remains in the atmosphere ("atmospheric lifetime"). The reference gas for GWP is CO_2; therefore, CO_2 has a GWP of 1. The other main GHGs attributed to human activity include CH_4, which has a GWP of 28, and N_2O, which has a GWP of 265 (IPCC 2013). For example, 1 ton of CH_4 has the same contribution to the greenhouse effect as approximately 28 tons of CO_2. GHGs with lower emissions rates than CO_2 may still contribute to climate change because they are more effective at absorbing outgoing infrared radiation than CO_2 (i.e., high GWP). The concept of carbon dioxide equivalents (CO_2e) is used to account for the different GWP potentials of GHGs to absorb infrared radiation.

Although the exact lifetime of any particular GHG molecule is dependent on multiple variables, it is understood by scientists who study atmospheric chemistry that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. GHG emissions related to human activities have been determined as "extremely likely" to be responsible (indicating 95 percent certainty) for intensifying the greenhouse effect and leading to a trend of unnatural warming of Earth's atmosphere and oceans, with corresponding effects on global circulation patterns and climate (CARB 2014).

2.7 TOXIC AIR CONTAMINANTS

In addition to criteria pollutants, both federal and state air quality regulations also focus on toxic air contaminants (TACs). TACs can be separated into carcinogens and noncarcinogens based on the nature of the effects associated with exposure to the pollutant. For regulatory purposes, carcinogens are assumed to have no safe threshold below which health impacts would not occur. Any exposure to a carcinogen poses some risk of contracting cancer. Noncarcinogens

differ as generally a safe level of exposure is assumed below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

TACs may be emitted by stationary, area, or mobile sources. Common stationary sources of TAC emissions include gasoline stations, dry cleaners, and diesel backup generators, which are subject to local air district permit requirements. The other, often more significant, sources of TAC emissions are motor vehicles on freeways, high-volume roadways, or other areas with high numbers of diesel vehicles, such as distribution centers. Off-road mobile sources are also major contributors of TAC emissions and include construction equipment, ships, and trains.

Particulate exhaust emissions from diesel-fueled engines (diesel PM) were identified as a TAC by CARB in 1998. Federal and state efforts to reduce diesel PM emissions have focused on the use of improved fuels, adding particulate filters to engines, and requiring the production of new-technology engines that emit fewer exhaust particulates.

Diesel engines tend to produce a much higher ratio of fine particulates than other types of internal combustion engines. The fine particles that make up diesel PM tend to penetrate deep into the lungs and the rough surfaces of these particles makes it easy for them to bind with other toxins within the exhaust, thus increasing the hazards of particle inhalation. Long-term exposure to diesel PM is known to lead to chronic, serious health problems including cardiovascular disease, cardiopulmonary disease, and lung cancer.

2.8 REGULATORY BACKGROUND

2.8.1 Federal

EPA has been charged with implementing national air quality programs. EPA's air quality mandates are drawn primarily from the federal Clean Air Act, which was enacted in 1970. The most recent major amendments to the Clean Air Act were made by Congress in 1990. EPA, under the provisions of the Clean Air Act, requires each state with regions that have not attained the NAAQS to prepare a State Implementation Plan, detailing how these standards are to be met in each local area. The State Implementation Plan is a legal agreement between each state and the federal government to commit resources to improving air quality. The State Implementation Plan is not a single document, but a compilation of new and previously submitted attainment plans, emissions reduction programs, district rules, state regulations, and federal controls.

General conformity requires that all federal actions conform to the State Implementation Plan as approved or promulgated by EPA. General conformity requirements were adopted by Congress as part of the Clean Air Act Amendments and were implemented by EPA regulations in the November 30, 1993 Federal Register (40 Code of Federal Regulations Sections 6, 51, and 93: "Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule"). Federal actions are required to evaluate construction and operational emissions against the applicable General Conformity Rule thresholds of significance, which are called de

minimis thresholds. The de minimis levels are based on the attainment/maintenance and nonattainment designations and classifications for the project area. If the emissions for a federal action would exceed the de minimis levels, a formal air quality conformity determination is required.

2.8.2 State

The 1976 Lewis Air Quality Management Act established the air pollution control districts and air quality management districts throughout the state. The California Clean Air Act of 1988 required nonattainment areas in the state to prepare air quality attainment plans. The attainment plans are required to achieve a minimum 5 percent annual reduction in the emissions of nonattainment pollutants unless all feasible measures have been implemented.

CARB coordinates and oversees both state and federal air pollution control programs in California. CARB oversees activities of local air quality management agencies and is responsible for incorporating Air Quality Management Plans (AQMPs) from local air basins into a State Implementation Plan for federal EPA approval. Significant authority for air quality control within these basins has been given to local air pollution control districts, such as SCAQMD, which regulate stationary source emissions and develop local attainment plans.

2.9 GLOBAL WARMING / GREENHOUSE GASES

Global climate change resulting from the GHG emissions is an emerging environmental concern being raised and discussed at the international, national, and statewide levels. At each level, agencies are considering strategies to control emissions of gases that contribute to global warming.

2.9.1 Federal

On April 2, 2007, the U.S. Supreme Court held that EPA must consider regulation of motor vehicle GHG emissions. In Massachusetts v. Environmental Protection Agency et al., 12 states and cities (including California) along with several environmental organizations sued to require EPA to regulate GHGs as pollutants under the Clean Air Act (127 S. Ct. 1438 [2007]). The Supreme Court ruled that GHGs fit within the Clean Air Act's definition of a pollutant and that EPA had the authority to regulate GHGs.

2.9.1.1 Greenhouse Gas Findings under the Federal Clean Air Act

On December 7, 2009, EPA signed two distinct findings regarding GHGs under section 202(a) of the Clean Air Act:

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases—CO2, CH4, N2O, HFCs, PFCs, and SF6—in the atmosphere threaten the public health and welfare of current and future generations.

- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

Although these findings did not themselves impose any requirements on industries or other entities, this action was a prerequisite to finalizing EPA's Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles. On May 7, 2010, the final Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards were published in the Federal Register. The emissions standards will require model year 2016 vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile, which is equivalent to 35.5 miles per gallon if the automobile industry were to meet this CO_2 level solely through fuel economy improvements.

On August 28, 2012, the U.S. Department of Transportation (USDOT) and EPA issued a joint Final Rulemaking requiring additional federal GHG and fuel economy standards for model year 2017 through 2025 passenger cars and light-duty trucks. The standards would require these vehicles to meet an estimated combined average emissions level of 163 grams of CO_2 per mile in model year 2025, which is equivalent to 54.5 miles per gallon if the improvements were made solely through fuel efficiency.

In addition to the standards for light-duty vehicles, USDOT and EPA adopted complementary standards to reduce GHG emissions and improve the fuel efficiency of heavy-duty trucks and buses on September 15, 2011. These standards together form a comprehensive heavy-duty national program for all on-road vehicles rated at a gross vehicle weight at or above 8,500 pounds for model years 2014 through 2018. The standards will phase in with increasing stringency in each model year from 2014 through 2018. The EPA standards adopted for 2018 will represent an average per-vehicle reduction in GHG emissions of 17 percent for diesel vehicles and 12 percent for gasoline vehicles (EPA 2011). The President has directed USDOT and EPA to develop and issue the next phase of heavy-duty vehicle fuel efficiency and GHG standards by March 2016.

2.9.1.2 Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, EPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule is a response to the fiscal year 2008 Consolidated Appropriations Act (House of Representatives Bill 2764; Public Law 110-161), which required EPA to develop "…mandatory reporting of GHGs above appropriate thresholds in all sectors of the economy…." The Reporting Rule applies to most entities that emit 25,000 metric tons (MT) of CO_2e or more per year. Since 2010, facility owners have been required to submit an annual GHG emissions report with detailed calculations of the facility's GHG emissions. The Reporting Rule also mandates compliance with recordkeeping and administrative requirements to enable EPA to verify annual GHG emissions reports.

2.9.1.3 Council on Environmental Quality Guidance

On December 18, 2014, the Council on Environmental Quality (CEQ) released revised draft guidance that supersedes the draft GHG and climate change guidance released by CEQ in February 2010. The revised draft guidance applies to all proposed federal agency actions, including land and resource management actions. This guidance explains that agencies should consider both the potential effects of a proposed action on climate change, as indicated by its estimated GHG emissions, and the implications of climate change for the environmental effects of a proposed action (CEQ 2014). The guidance encourages agencies to draw from their experience and expertise to determine the appropriate level (broad, programmatic or project- or site-specific) and type (quantitative or qualitative) of analysis required to comply with the National Environmental Policy Act. The guidance recommends that agencies consider 25,000 MT CO_2e on an annual basis as a reference point below which a quantitative analysis of GHG emissions is not recommended unless it is easily accomplished based on available tools and data (CEQ 2014).

2.9.2 State

The legal framework for GHG emission reductions has come about through Executive Orders, legislation, and regulations. The major components of California's climate change initiative are reviewed below.

2.9.2.1 Assembly Bill 1493

Assembly Bill (AB) 1493 required that the CARB 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 CARB to be vehicles whose primary use is noncommercial personal transportation in the state." To meet the requirements of AB 1493, in 2004 CARB approved amendments to the California Code of Regulations adding GHG emissions standards to California's existing standards for motor vehicle emissions.

2.9.2.2 Executive Order S-3-05

Executive Order S-3-05, signed in June 2005, proclaimed that California is vulnerable to the impacts of climate change. Executive Order S-3-05 declared that increased temperatures could reduce the Sierra Nevada's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the executive order established total GHG emissions targets. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

2.9.2.3 Assembly Bill 32

In 2006, California passed the California Global Warming Solutions Act of 2006 (AB 32; California Health and Safety Code Division 25.5, Sections 38500, et seq.). AB 32 further details and puts into law the mid-term GHG reduction target established in Executive Order S-3-05: reduce GHG emissions to 1990 levels by 2020. AB 32 also identifies CARB as the state agency

responsible for the design and implementation of emissions limits, regulations, and other measures to meet the target.

In December 2008, CARB adopted its Climate Change Scoping Plan (Scoping Plan), which contains the main strategies California will implement to achieve the GHG reductions required by AB 32 (CARB 2008). The Scoping Plan also includes CARB-recommended GHG reductions for each emissions sector of California's GHG inventory. The Scoping Plan calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards:

- Improved emissions standards for light-duty vehicles;
- Low Carbon Fuel Standard;
- Energy efficiency measures in buildings and appliances; and
- Renewable portfolio standard for electricity production.

The Scoping Plan states that land use planning and urban growth decisions will play an important role in the state's GHG reductions because local governments have primary authority to plan, zone, approve, and permit how land is developed.

CARB is required to update the Scoping Plan at least once every 5 years to evaluate progress and develop future inventories that may guide this process. CARB approved the *First Update to the Climate Change Scoping Plan: Building on the Framework* in May 22, 2014. The Scoping Plan update includes a status of the 2008 Scoping Plan measures and other state, federal, and local efforts to reduce GHG emissions in California and potential actions to further reduce GHG emissions by 2020 (CARB 2014).

2.9.2.4 Executive Order S-1-07

Executive Order S-1-07, which was signed by then California Governor Arnold Schwarzenegger in 2007, proclaims that the transportation sector is the main source of GHG emissions in California, at more than 40 percent of statewide emissions. Executive Order S-1-07 establishes a goal that the carbon intensity of transportation fuels sold in California should be reduced by a minimum of 10 percent by 2020. This order also directed CARB to determine if this low-carbon fuel standard (LCFS) could be adopted as a discrete early action measure after meeting the mandates in AB 32. CARB adopted the LCFS on April 23, 2009.

2.9.2.5 Senate Bill 97

Senate Bill (SB) 97 required the Governor's Office of Planning and Research to develop recommended amendments to the California Environmental Quality Act (CEQA) Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

2.9.2.6 Senate Bill 375

SB 375, signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires Metropolitan

Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or an Alternative Planning Strategy (APS), which will prescribe land use allocation in that MPO's Regional Transportation Plan (RTP). On September 23, 2010, CARB adopted regional GHG targets for passenger vehicles and light trucks for 2020 and 2035 for the 18 MPOs in California. If MPOs do not meet the GHG reduction targets, transportation projects would not be eligible for funding programmed after January 1, 2012.

This bill also extends the minimum time period for the Regional Housing Needs Allocation cycle from 5 years to 8 years for local governments located within an MPO that meet certain requirements. City or county land use policies (including general plans) are not required to be consistent with the RTP (and associated SCS or APS). However, new provisions of CEQA would incentivize qualified projects that are consistent with an approved SCS or APS, categorized as "transit priority projects."

2.9.2.7 Senate Bills 1078, 107, and X1-2

SB 1078 established California's Renewable Portfolio Standard in 2002. SB 1078 required retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 changed the target date to 2010. Executive Order S-14-08 expanded California's Renewable Energy Standard to 33 percent renewable power by 2020. This new goal was codified in 2011 with the passage of SB X1-2.

2.9.2.8 Executive Order B-30-15

In April 2015, Governor Edmund Brown issued an executive order establishing a statewide GHG reduction goal of 40 percent below 1990 levels by 2030. The emission reduction target acts as an interim goal between the AB 32 goal (i.e., achieve 1990 emission levels by 2020) and Governor Brown's Executive Order S-03-05 goal of reducing statewide emissions 80 percent below 1990 levels by 2050. In addition, the executive order aligns California's 2030 GHG reduction goal with the European Union's reduction target (i.e., 40 percent below 1990 levels by 2030) adopted in October 2014.

2.9.3 Local

In September 2015, the City of Yucaipa adopted a Climate Action Plan (CAP) that includes GHG emission inventories, identifies the effectiveness of California initiatives to reduce GHG emissions, and identifies local measures to reduce GHG emissions. The City has selected a goal to reduce community-wide GHG emissions by 15 percent below 2008 baseline levels by the year 2020. The City's target is consistent with AB 32 and ensures that the City is providing GHG reductions locally that will complement the state and international efforts of stabilizing climate change. The City will meet this goal through a combination of state and local measures that address emissions related to building energy, on-road and off-road transportation, wastewater, water conveyance, and solid waste.

3.0 METHODOLOGY

3.1 THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the CEQA Guidelines, a project would have a significant impact on the environment if the project would:

Air Quality

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.

Greenhouse Gases

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

3.1.1 South Coast Air Quality Management District Thresholds

The analysis of the project's air quality impacts follows the guidance and methodologies recommended in SCAQMD's *Air Quality Analysis Guidance Handbook*. CEQA allows for the significance criteria established by the applicable air quality management or air pollution control district to be used to assess impacts of a project on air quality. SCAQMD has established thresholds of significance for regional air quality emissions for construction activities and project operations.

3.1.1.1 Regional Significance Thresholds

SCAQMD has adopted regional construction and operational emissions thresholds to determine a project's impact on air quality in the South Coast Air Basin. Table 3-1 lists SCAQMD's regional significance thresholds for criteria pollutant and GHG emissions.

Table 3-1, SCAQMD Significance Thresholds

Air Pollutant	Construction Phase	Operational Phase
Volatile Organic Compounds (VOCs)	75 lbs./day	55 lbs./day
Carbon Monoxide (CO)	550 lbs./day	550 lbs./day
Nitrogen Oxides (NO_X)	100 lbs./day	55 lbs./day
Sulfur Oxides (SO_X)	150 lbs./day	150 lbs./day
Coarse Inhalable Particulates (PM_{10})	150 lbs./day	150 lbs./day
Fine Inhalable Particulates ($PM_{2.5}$)	55 lbs./day	55 lbs./day
Greenhouse Gases	3,000 metric tons/year CO_2e for residential uses	

lbs./day = pounds per day
Source: SCAQMD 2010, 2015; City of Yucaipa 2015

The SCAQMD GHG CEQA Significance Threshold Stakeholder Working Group recommended options for evaluating nonindustrial projects, including thresholds for residential, commercial, and mixed-use projects (SCAQMD 2010). The draft thresholds released by SCAQMD include a threshold of 3,000 MT CO_2e per year for residential projects. At the time of this analysis, these draft thresholds have not been adopted by SCAQMD. The City of Yucaipa has proposed the same threshold for GHG emissions in the CAP as shown in Table 3-1. Since the proposed project would include only residential land uses, the proposed SCAQMD and City of Yucaipa threshold of 3,000 MT CO_2e per year will be used for this analysis.

3.1.1.2 Localized Significance Thresholds

Localized concentrations of air pollutants refer to an amount of pollutant in a volume of air (parts per million or $\mu g/m^3$). Localized emissions of criteria air pollutants and precursors were assessed in accordance with SCAQMD's Localized Significance Threshold (LST) guidance. LSTs are applicable only to NO_X, CO, PM_{10}, and $PM_{2.5}$. The LST analysis only considers on-site emissions generated by construction activities. Emissions associated with vehicle trips to and from the project site during construction would be dispersed throughout the region and would have a nominal localized impact at the project site.

LSTs represent the maximum amount of emissions at a project site that would not cause or contribute to an exceedance of the most stringent NAAQS or CAAQS. LSTs are based on the ambient concentrations of that pollutant, within the project SRA and the distance to the nearest sensitive receptor. SCAQMD recommends that lead agencies perform project-specific air quality modeling for projects larger than 5 acres. For projects less than 5 acres, SCAQMD has developed look-up tables showing the maximum emissions that would not cause an exceedance of any LST. The South Coast Air Basin is divided into SRAs with common characteristics; these include meteorological conditions and air pollutant sources.

SCAMQD states that LSTS can be used as screening criteria for larger projects to determine whether dispersion modeling may be required. Table 3-2 lists the LSTs for a 5-acre project site for sensitive receptors within 25 meters (approximately 82 feet). The use of thresholds for a 5-acre site is conservative because a much larger project site, such as the project at a total of 236

acres, would allow for greater separation between the emission sources and off-site sensitive receptors. Therefore, the LST look-up tables were considered appropriate for the analysis. As shown in Table 3-2, conservative LST values were used for the analysis, assuming a 25-meter distance and 5-acre site within SRA 35, East San Bernardino Valley.

Table 3-2, SCAQMD Localized Significance Threshold

Air Pollutant	Threshold (lbs./day) Construction[1]
Nitrogen Oxides (NO_2)	270
Carbon Monoxide (CO)	2,075
Coarse Particulates (PM_{10})	14
Fine Particulates ($PM_{2.5}$)	9

lbs./day = pounds per day
Source: SCAQMD 2009
[1] Based on a 5-acre site with receptors 25 meters (82 feet) from the source in SRA 35.

3.1.1.2.1 CO Hotspots

Localized CO impacts are determined based on the presence of congested intersections. The significance of localized project impacts depends on whether the project would cause substantial concentrations of CO. A project is considered to have significant impacts if project-related mobile-source emissions result in an exceedance of the California 1-hour and 8-hour CO standards:

- 1 hour = 20 ppm
- 8 hour = 9 ppm

3.2 METHODOLOGY

Criteria pollutant emissions from construction activities are primarily from fugitive dust and exhaust emissions from construction equipment. Exhaust emissions are generated from off-road equipment, vehicles used to deliver construction material, and worker vehicles. Fugitive dust is generated from site grading and construction equipment traveling on unpaved roads (i.e., dirt roads). The California Emissions Estimator Model Version 2013.2.2 (CalEEMod) computer program was used to estimate the construction emissions. CalEEMod allows the user to enter project-specific construction information, such as types, number, and horsepower of construction equipment, and number and length of off-site motor vehicle trips. Where project-specific data were not available, the default values within CalEEMod were used.

Operational emissions may be both direct and indirect emissions, and would be generated by area and mobile sources associated with the project. Criteria air pollutant emissions from operational activities are primarily from mobile source emissions from project-generated vehicles. Mobile-source emissions would include vehicle trips by residents. Area-source emissions would be associated with activities such as maintenance of landscaping and grounds.

Natural gas combustion for space and water heating is also a direct area source of emissions. Vehicle fleet characteristics, energy consumption, waste generation, and water use and wastewater generation data specific to San Bernardino County or specific to the project were used in place of CalEEMod defaults, where available.

The project is intended to be phased based upon projected demand and sales potential. Although production-type housing is not proposed by the applicant at this time, such occurrence is possible. Therefore, construction and operation of the residences could occur in phases through 2040. However, the analysis conservatively assumes that all construction could occur in 1 year (beginning in 2016), and that operation of the project would begin in 2017. If construction and operation occur later than these years, emissions would be less due to a reduction in emission rates for future years due to cleaner vehicles.

4.0 IMPACT ANALYSIS

Air pollutant emissions associated with the project would occur over the short and long term. Short-term emissions are from construction activities such as fugitive dust from site preparation, grading, and emissions from construction equipment exhaust. Long-term emissions are from vehicles traveling to and from the project site, as well as the increase in use of electricity and natural gas. To determine whether the project would have a significant impact on air quality, the AQIA has to show that the implementation of the project would generate an increase in emissions that would exceed the SCAQMD construction and operational significance thresholds.

4.1 CONSISTENCY WITH THE AIR QUALITY MANAGEMENT PLAN

Air quality plans describe air pollution control strategies to be implemented by a city, county, or regional air district. The primary purpose of the AQMP is to bring an area that does not attain federal and state air quality standards into compliance with those standards pursuant to the requirements of the Clean Air Act and California Clean Air Act.

A consistency determination plays an important role in local agency project review by linking local planning and individual projects to the AQMP. The regional emissions inventory for the South Coast Air Basin is compiled by SCAQMD, the San Bernardino Association of Governments (SANBAG), and the Southern California Association of Governments (SCAG). Regional population, housing, and employment projections developed by SANBAG and SCAG for the RTP are based, in part, on the City's General Plan land use designations. These demographic trends are incorporated into the RTP compiled by SCAG, to determine priority transportation projects and determine vehicle miles travelled within the SCAG region.

The project would not require a General Plan amendment and would be consistent with the 2004 Yucaipa General Plan and Zoning Map. The project site is designated "Rural Living" on 1-acre lots (RL-1). The project would result in the construction of 184 new residential lots consistent with that designation. Based on the average of 2.9 persons per household in the City of Yucaipa, it is estimated that the project would result in approximately 534 additional residents. Because the project is consistent with the assumptions associated with the current assumptions used to develop the General Plan and RTP, it is reasonable to assume that the intensity of operational emissions have been accounted for in the 2012 AQMP. Therefore, the project would not conflict with or obstruct implementation of the applicable AQMP. The impact would be less than significant.

4.2 VIOLATE ANY AIR QUALITY STANDARD OR CONTRIBUTE SUBSTANTIALLY TO AN EXISTING OR PROJECTED AIR QUALITY VIOLATION

4.2.1 Construction Impacts

As discussed in Section 3.2, construction of the project was assumed to occur over approximately 1 year. Emissions associated with construction of the project were assessed for the years 2016 and 2017, which are the earliest year that construction could occur. However, the construction of the project's residences would be based on market conditions and could occur over a longer period of time. The analysis is conservative since it assumes that construction activity for the residences would occur concurrently, resulting in higher daily emissions. Specific sources of emissions associated with construction would include exhaust from diesel construction equipment at the site and dust generated by the mechanical disturbance of the soil due to equipment and truck travel within the site. In addition, worker commuter trips would occur to and from the site for construction employees. A typical construction schedule of 8 hours per day, 5 days per week was assumed.

4.2.1.1 Regional Criteria Pollutants

Maximum daily regional emissions from construction of the project are shown in Table 4-1 and compared to the daily SCAQMD CEQA significance thresholds.

Table 2-1, Unmitigated Project Construction Emissions

Construction Phase[1]	*Emissions (lbs./day)*					
	VOCs	*NO_X*	*CO*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
Maximum Construction Day (2016)	5.15	54.73	42.35	0.04	10.19	6.63
Maximum Construction Day (2017)	29.20	69.69	48.04	0.07	11.03	4.96
SCAQMD Standard	75	100	550	150	150	55
Significant?	No	No	No	No	No	No

Lbs./day = pounds per day
Source: Modeled by AECOM 2016
[1] PM emissions include fugitive dust control measures as promulgated by SCAQMD Rule 403, requiring an application of water at least twice per day to at least 80 percent of the unstabilized disturbed on-site surface areas, maintaining at least 6 inches of freeboard and placing a protective tarp on haul vehicles, replacing disturbed ground cover quickly, restricting speeds on unpaved roads to less than 15 miles per hour, and watering unpaved haul roads twice per day.

As shown in Table 4-1, construction-generated emissions of VOCs, NO_X, CO, SO_2, PM_{10}, and PM2.5 would not exceed applicable daily thresholds established by SCAQMD. Therefore, construction emissions would not violate an ambient air quality standard or contribute substantially to an existing violation. This impact would be less than significant.

4.2.1.2 Localized Construction Emissions in Comparison with SCAQMD Thresholds

As shown in Table 4-2, emissions generated at the 5-acre development area would not exceed SCAQMD's LSTs.

Table 3-2, Maximum Daily Construction Emissions Compared with the LST

Maximum Emissions[1]	*Pollutants (lbs./day)*			
	NO_x	*CO*	*PM_{10}*	*$PM_{2.5}$*
Maximum Site Preparation	54.63	41.10	9.98	6.58
SCAQMD Localized Significance Threshold	270	2,075	14	9
Exceeds Threshold?	No	No	No	No

Source: Modeled by AECOM 2016. Does not include emissions from on-road vehicles traveling outside the boundaries of the project site, in accordance with SCAQMD LSTs methodology.

[1] PM_{10} and $PM_{2.5}$ generated by fugitive dust assumes implementation of SCAQMD Rule 403 for fugitive dust control, which includes the following dust control measures during ground-disturbing activities: replacing groundcover in disturbed areas quickly, watering exposed surfaces at least two times daily, implementation of equipment loading/unloading procedures to reduce fugitive dust, managing haul road dust by watering two times daily, and reducing speed on unpaved roads to less than 15 miles per hour.

4.2.2 Operational Impacts

4.2.2.1 Regional Emissions

Mobile source emissions were based on vehicle trips from the traffic impact analysis (AECOM 2016). According to the traffic analysis, the project would generate 1,752 average daily trips, with 138 trips in the morning peak hour and 184 trips in the evening peak hour. Area-source emissions would be associated with consumer products, hearths, and landscaping equipment. Natural gas combustion for space and water heating is also a direct area source of emissions. The results of the CalEEMod computer modeling for operation emissions associated with the buildout of the project are included in Table 4-3 for the year 2017. Model runs are included in Appendix A.

Table 4-3, Regional Operational Phase Emissions

Operations Phase	*VOCs*	*NO_X*	*CO*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*
Area	55.96	1.40	107.82	0.15	14.14	14.14
Energy	0.18	1.57	0.67	0.01	0.13	0.13
Mobile	7.07	22.12	84.68	0.20	13.68	3.85
Maximum Daily Operation Emissions	**63.22**	25.09	193.17	0.36	27.95	18.12
SCAQMD Regional Significance Threshold	**55**	55	550	150	150	55
Exceeds Threshold?	**Yes**	No	No	No	No	No

Source: Modeled by AECOM in 2016

As shown in Table 4-3, emissions generated during operation of the project would not exceed SCAQMD's regional significance thresholds for NO_X, CO, SO_2, PM_{10} and $PM_{2.5}$, but will exceed the thresholds for VOCs. The exceedance of the VOC threshold is primarily due to hearth emissions, which account for an estimated 48 pounds per day. SCAQMD Rule 445 prohibits the installation of permanent indoor and outdoor wood-burning devices (such as fireplaces and stoves) in new developments. However, that rule includes an exemption for residential developments in locations that are higher than 3,000 feet above mean sea level (AMSL). Since

the project site is greater than 3,000 feet AMSL, the requirements of Rule 445 do not apply and the project can install wood-burning hearths. Therefore, operational VOC emissions could violate an ambient air quality standard or contribute substantially to an existing violation. Implementation of mitigation measure AQ-1 would be required to reduce impacts to less than significant.

4.3 RESULT IN A CUMULATIVELY CONSIDERABLE NET INCREASE OF CRITERIA POLLUTANT EMISSIONS ASSOCIATED WITH CONSTRUCTION OF THE PROJECT

The SCAQMD cumulative analysis focuses on whether a specific project would result in cumulatively considerable contribution of emissions to the region. Per CEQA Guidelines Section 15064(h)(4), the existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the project's incremental effects are cumulatively considerable.

The South Coast Air Basin is considered a nonattainment area for ozone, and VOCs are one of the precursors to the photochemical formation of ozone. As discussed earlier, the project would result in the generation of VOC emissions at levels that exceed the SCAQMD regional thresholds for operational activities. These thresholds are designed to identify those projects that would result in significant levels of air pollution and that would assist the region in attaining the applicable state and federal ambient air quality standards. When a project exceeds these significance thresholds, it is considered to impede attainment and maintenance of ambient air quality standards.

Because the project would exceed the SCAQMD project-level air quality significance thresholds for VOC emissions, the project's operational emissions would have a cumulatively considerable contribution to the region's air quality. Therefore, the cumulative impact would be significant. Implementation of mitigation measure AQ-1 would be required to reduce impacts to less than significant.

4.4 EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL POLLUTANT CONCENTRATIONS.

Some members of the population are especially sensitive to air pollutant emissions and should be given special consideration when evaluating air quality impacts from projects. These people include children, older adults, persons with preexisting respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. Structures that house these persons or places where they gather are defined as sensitive receptors by SCAQMD. According to SCAQMD, sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.

The nearest sensitive receptors to the project site are residential homes located to the south and west of the project site. The residential units represent the nearest sensitive receptors with potential to be impacted by the project.

4.4.1 Construction

The greatest potential for TAC emissions would be related to diesel PM emissions associated with heavy-duty construction equipment operations. According to SCAQMD methodology, health effects from carcinogenic TACs are usually described in terms of individual cancer risk, which is based on a 30-year lifetime exposure to TACs.

Building construction activities would last approximately 1 year, or be phased with individual residences constructed over time. If the duration of potentially harmful construction activities near a sensitive receptor was1 year, then the exposure would be approximately 3% of the total exposure period used for typical health risk calculations (i.e., 30 years). If construction activities were phased over time, construction activity would be dispersed over the project site (i.e., 236 acres), and emissions would not occur in the vicinity of any individual receptor for a substantial period of time.

In addition, construction emissions would occur intermittently throughout the day and would not occur as a constant plume of emissions from the project site. Construction of the proposed project would also not exceed the SCAQMD localized significance thresholds, and unhealthful pollutant concentrations would not be generated. Therefore, the project would not expose sensitive receptors to substantial construction pollutant concentrations. The impact would be less than significant.

4.4.2 CO Hotspot Analysis

CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere. Adherence to ambient air quality standards is typically demonstrated through an analysis of localized CO concentrations. Areas of vehicle congestion have the potential to create pockets of CO called “hotspots.” Due to technological advances in catalytic converters and improved fuel economy, ambient levels of CO have been reduced and the presence of CO hotspots is rare at roadway intersections. Because increased CO concentrations are usually associated with roadways that are congested and have heavy traffic volumes, many agencies have established preliminary screening criteria to determine with fair certainty that project-generated, long-term operational local mobile-source emissions would not result in a CO hotspot.

If a project causes roads and intersections to deteriorate to Level of Service (LOS) E or worse, the resulting longer queue at the traffic signals could cause a localized significant air quality impact (UCD ITS 1997). According to the traffic study prepared for the project, all intersections and roadway segments would operate at LOS B or better in 2040 with or without implementation of the project (AECOM 2016).

Therefore, the CO concentrations resulting from the project would not violate the CAAQS for the 1-hour period (20 ppm) or the 8-hour period (9.0 ppm). This impact would be less than significant.

4.4.3 Operational TAC Emissions

CARB has also developed the *Air Quality and Land Use Handbook: A Community Health Perspective* to provide guidance on land use compatibility with sources of TACs (CARB 2005). These sources include freeways and high-traffic roads, commercial distribution centers, rail yards, refineries, dry cleaners, gasoline stations, and industrial facilities. The handbook is not a law or adopted policy, but offers advisory recommendations for the siting of sensitive receptors near uses associated with TACs. The handbook indicates that land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.

CARB recommendations relevant to the project include avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day. The project is located more than 5,000 feet (approximately 1 mile) from Bryant Street, which is the nearest rural road with the highest volume of 19,122 vehicles per day in 2040. Oak Glen Road is located adjacent to the project site and is estimated to have a maximum daily volume 10.948 vehicles in 2040. These roadways do not meet the minimum traffic volumes in the CARB Handbook that require a setback distance. Since the project is consistent with the recommendations of the CARB Handbook, no adverse health risks are anticipated based on the setback distances for the project.

The land uses associated with the project would be residential, which are not typical sources of TAC emissions. Therefore, the project's long-term operational activities would not generate substantial TAC emissions and would not expose sensitive receptors to substantial operational TAC concentrations. The impact would be less than significant.

4.5 ODORS

Odors do not generally result in health concerns but can constitute a public nuisance, under certain circumstances. Odors generated by a project have the potential to be an impact when they become objectionable, affecting a substantial number of people. The project would use typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. Because of the amount and types of equipment, the temporary nature of these emissions, and the highly diffusive properties of diesel exhaust, nearby receptors would not be affected by diesel exhaust odors associated with project construction.

Operation of the project would not add any new odor sources. The land uses associated with the project would be residential, which are not typically large generators of odor emissions. The project would not have any significant odor sources, and any odors generated would be similar to existing odors associated with land uses in the area. As a result, the project's construction

and operational activities would not create objectionable odors affecting a substantial number of people, and the proposed residents would not be impacted by any existing odor sources. The impact would be less than significant.

4.6 GENERATE GHG EMISSIONS, EITHER DIRECTLY OR INDIRECTLY, THAT MAY HAVE A SIGNIFICANT IMPACT ON THE ENVIRONMENT

4.6.1 Construction

Construction activities would generate a total of approximately 622 MT CO_2e. SCAQMD's methodology involves amortizing construction emissions over the life of the project, which is assumed 30 years. The amortized annual GHG emissions would be 21 MT CO_2e per year. As mentioned earlier, SCAQMD recommends that construction-related GHG emissions be amortized and compared to the thresholds of significance along with operational GHG emissions.

4.6.2 Operation

GHG emissions generated during the operational phase of the project would include emissions from mobile, energy consumption, water consumption, waste disposal, and area sources. For the operational phase of the project, the project's GHG emissions are separated into emission sources for the applicable GHG emissions sectors. Mobile source emissions make up the largest proportion of emissions associated with a project. The second largest source of emissions is from energy consumption.

Table 4-4, Annual Operational Phase GHG Emissions

Source	GHG Emissions MT CO_2e/Year
Amortized Construction	21
Area	62
Energy	740
Mobile	2,576
Waste	98
Water	84
Total All Project Sources	**3,580**
SCAQMD Significance Threshold	**3,000**
Exceeds Threshold?	**Yes**

Notes: MT = metric ton
Source: Modeled by AECOM 2016

As shown in Table 4-4, the net increase in emissions would be 3,580 MT CO_2e per year. The project-related GHG emissions, including amortized construction and annual operational GHG emissions, would exceed the SCAQMD and City of Yucaipa threshold of 3,000 MT CO_2e per

year. The analysis conservatively omits emission benefits of future emission reductions associated with improved vehicle standards, the Renewable Portfolio Standards, and Title 24 building code standards. Therefore, the project would generate GHG emissions that may have a significant impact on the environment. Implementation of mitigation measure GHG-1 would be required to reduce impacts to less than significant.

4.6.3 Consistency with GHG Reduction Plans

In accordance with AB 32, CARB developed the Scoping Plan to outline the state's strategy to achieve 1990 level emissions by year 2020. The following emission reduction measures were identified in the Scoping Plan that are relevant to the project to reduce GHG emissions.

1. **California Light-Duty Vehicle Greenhouse Gas Standards** – Implement adopted Pavley standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and vehicle technology programs with long-term climate change goals.

2. **Energy Efficiency** – Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts including new technologies, and new policy and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California (including both investor-owned and publicly-owned utilities).

3. **Renewables Portfolio Standard** – Achieve 33 percent renewable energy mix statewide.

4. **Low Carbon Fuel Standard** – Develop and adopt the Low Carbon Fuel Standard. Reduce the carbon intensity of California's transportation fuels by at least ten percent by 2020.

5. **Regional Transportation-Related Greenhouse Gas Targets** – Develop regional greenhouse gas emissions reduction targets for passenger vehicles.

6. **Vehicle Efficiency Measures** – Implement light-duty vehicle efficiency measures.

7. **Million Solar Roofs Program** – Install 3,000 MW of solar-electric capacity under California's existing solar programs.

8. **Green Building Strategy** – Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.

9. **Recycling and Waste** – Reduce methane emissions at landfills. Increase waste diversion, composting and other beneficial uses of organic materials, and mandate commercial recycling. Move toward zero-waste.

10. **Water** – Continue efficiency programs and use cleaner energy sources to move and treat water.

The Scoping Plan did not directly create any regulatory requirements for construction and operation of the project. However, measures included in the Scoping Plan would indirectly address GHG emissions levels associated with construction activities, including the phasing-in of cleaner technology for diesel engine fleets (including construction equipment) and the development of an LCFS. The project would comply with any mandate or standards set forth by the Scoping Plan update.

The City's Development Review Process provides strategies for reducing community-wide emissions associated with new development and utilizes Screening Tables to mitigate project GHG emissions that exceed the threshold level of 3,000 MT CO_2e per year. As shown in Table 4-4, the average annual emissions for the project would exceed the threshold of significance. Therefore, consistency with the CAP would be based on whether the project implements that measure in the Screening Tables. The point values in the CAP Screening Tables correspond to the minimum emissions reduction expected from each feature. The menu of features allows maximum flexibility and options for how development projects can implement the GHG reduction measures.

The residential lots on the project site will be sold to home buyers to build and construct on an individual basis. Each homeowner would act as their own developer and would be responsible for hiring professionals to prepare plans for review and approval by the City. No production-type housing is proposed by the project applicant at this time. Individual residential development would provide a completed checklist during the Development Review Process. Since the details of development are not available at the time of this analysis, the project would not be consistent with the goals and strategies of the CAP. Therefore, the project would conflict with any applicable plan, policy, or regulation for the purpose of reducing GHG emissions. This impact would be potentially significant. Implementation of mitigation measure GHG-1 would be required to reduce impacts to less than significant.

4.7 MITIGATION MEASURES

To reduce operational-related GHG emissions, the project shall implement all applicable control measures, as follows:

AQ-1 The Project shall comply with the requirements of SCAQMD Rule 445 with regard to the installation of permanent indoor wood-burning devices (such as fireplaces and stoves). The exemption for residential properties above 3,000 or more feet AMSL shall not apply to the Project.

GHG-1 As a condition of approval prior to issuing building permits, development proposals associated with the project shall be required to demonstrate that the residential unit(s) would obtain at least 100 points from the Screening Tables for residential projects in the City of Yucaipa CAP.

4.8 PROJECT IMPACTS AFTER MITIGATION

The operational phase of the project would generate VOC emissions that exceed the SCAQMD threshold of significance. These emissions are primarily related to hearth emissions. There are no feasible mitigation measures that could be implemented by the project. Therefore, the operational phase would continue to exceed the significance threshold for VOC emissions. Therefore, the project would result in a significant and unavoidable adverse impact to air quality.

As stated in the CAP, those projects that garner a total of 100 points or greater would have a less than significant individual and cumulative impact for GHG emissions. A development application for the project that would achieve a total of 100 points would also be consistent with the CAP. Therefore, implementation of mitigation measure GHG-1 would reduce significant impacts of GHG emissions and consistency with applicable GHG emission reduction plans to a less than significant level.

5.0 REFERENCES

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APPENDIX A

CALEEMOD MODEL OUTPUT

Wilson Creek Estates

San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Su
Single Family Housing	184.00	Dwelling Unit	236.00	331,2

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Site acreage

Construction Phase - Project specific schedule

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Minimal amount of demolition

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Demolition -

Grading - Site acreage

Vehicle Trips - Project specific trips rates

Vechicle Emission Factors - Residential fleet mix

Vechicle Emission Factors - Residential fleet mix

Vechicle Emission Factors - Residential fleet mix

Land Use Change -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	330.00	111.00
tblConstructionPhase	NumDays	4,650.00	222.00
tblConstructionPhase	NumDays	465.00	19.00
tblConstructionPhase	NumDays	330.00	111.00
tblConstructionPhase	NumDays	180.00	20.00
tblConstructionPhase	PhaseEndDate	12/4/2017	6/30/2017
tblConstructionPhase	PhaseEndDate	6/5/2017	6/30/2017
tblConstructionPhase	PhaseEndDate	7/27/2017	8/24/2017
tblConstructionPhase	PhaseEndDate	12/4/2017	6/30/2017
tblConstructionPhase	PhaseStartDate	7/1/2017	1/27/2017
tblConstructionPhase	PhaseStartDate	7/29/2016	8/25/2016
tblConstructionPhase	PhaseStartDate	7/1/2017	7/29/2017
tblConstructionPhase	PhaseStartDate	7/1/2017	1/27/2017
tblGrading	AcresOfGrading	47.50	236.00
tblLandUse	LotAcreage	59.74	236.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	10.08	10.03
tblVehicleTrips	SU_TR	8.77	8.72
tblVehicleTrips	WD_TR	9.57	9.52

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	5.1545	54.7264	42.3452	0.0416	18.2675	2.9402	21.2076	9.9840	2.7050	12.6890	0.0000	4,275.2052	4,275.2052	1.2366	0.0000	4,301.1737
2017	29.1958	69.6857	48.0425	0.0696	19.4182	3.3188	22.7370	4.7918	3.0533	7.8451	0.0000	6,685.8773	6,685.8773	1.9450	0.0000	6,726.7232
Total	**34.3503**	**124.4122**	**90.3877**	**0.1112**	**37.6856**	**6.2590**	**43.9446**	**14.7759**	**5.7582**	**20.5341**	**0.0000**	**10,961.0825**	**10,961.0825**	**3.1816**	**0.0000**	**11,027.8969**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	5.1545	54.7264	42.3452	0.0416	7.2470	2.9402	10.1872	3.9263	2.7050	6.6313	0.0000	4,275.2052	4,275.2052	1.2366	0.0000	4,301.1737
2017	29.1958	69.6857	48.0425	0.0696	7.7095	3.3188	11.0282	1.9050	3.0533	4.9583	0.0000	6,685.8773	6,685.8773	1.9450	0.0000	6,726.7232
Total	**34.3503**	**124.4122**	**90.3877**	**0.1112**	**14.9565**	**6.2590**	**21.2155**	**5.8313**	**5.7582**	**11.5896**	**0.0000**	**10,961.0825**	**10,961.0825**	**3.1816**	**0.0000**	**11,027.8969**

	ROG	**NOx**	**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**	**60.31**	**0.00**	**51.72**	**60.54**	**0.00**	**43.56**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	55.9595	1.4020	107.8193	0.1479		14.1387	14.1387		14.1365	14.1365	1,723.5130	3,339.3336	5,062.8466	5.1673	0.1170	5,207.6233
Energy	0.1836	1.5687	0.6675	0.0100		0.1268	0.1268		0.1268	0.1268		2,002.6151	2,002.6151	0.0384	0.0367	2,014.8027
Mobile	7.0747	22.1170	84.6808	0.2048	13.3773	0.3052	13.6824	3.5728	0.2808	3.8536		17,462.0840	17,462.0840	0.6203		17,475.1109
Total	**63.2178**	**25.0877**	**193.1676**	**0.3628**	**13.3773**	**14.5707**	**27.9480**	**3.5728**	**14.5442**	**18.1169**	**1,723.5130**	**22,804.0327**	**24,527.5456**	**5.8260**	**0.1537**	**24,697.5369**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	55.9595	1.4020	107.8193	0.1479		14.1387	14.1387		14.1365	14.1365	1,723.5130	3,339.3336	5,062.8466	5.1673	0.1170	5,207.6233
Energy	0.1836	1.5687	0.6675	0.0100		0.1268	0.1268		0.1268	0.1268		2,002.6151	2,002.6151	0.0384	0.0367	2,014.8027
Mobile	7.0747	22.1170	84.6808	0.2048	13.3773	0.3052	13.6824	3.5728	0.2808	3.8536		17,462.0840	17,462.0840	0.6203		17,475.1109
Total	**63.2178**	**25.0877**	**193.1676**	**0.3628**	**13.3773**	**14.5707**	**27.9480**	**3.5728**	**14.5442**	**18.1169**	**1,723.5130**	**22,804.0327**	**24,527.5456**	**5.8260**	**0.1537**	**24,697.5369**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	7/1/2016	7/28/2016	5	20	
2	Building Construction	Building Construction	8/25/2016	6/30/2017	5	222	
3	Paving	Paving	1/27/2017	6/30/2017	5	111	
4	Architectural Coating	Architectural Coating	1/27/2017	6/30/2017	5	111	
5	Grading	Grading	7/29/2017	8/24/2017	5	19	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 236

Acres of Paving: 0

Residential Indoor: 670,680; Residential Outdoor: 223,560; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	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
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	66.00	20.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	5.0771	54.6323	41.1053	0.0391		2.9387	2.9387		2.7036	2.7036		4,065.0053	4,065.0053	1.2262		4,090.7544
Total	**5.0771**	**54.6323**	**41.1053**	**0.0391**	**18.0663**	**2.9387**	**21.0049**	**9.9307**	**2.7036**	**12.6343**		**4,065.0053**	**4,065.0053**	**1.2262**		**4,090.7544**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0774	0.0941	1.2399	2.5300e-003	0.2012	1.4900e-003	0.2027	0.0534	1.3700e-003	0.0547		210.2000	210.2000	0.0104		210.4193
Total	**0.0774**	**0.0941**	**1.2399**	**2.5300e-003**	**0.2012**	**1.4900e-003**	**0.2027**	**0.0534**	**1.3700e-003**	**0.0547**		**210.2000**	**210.2000**	**0.0104**		**210.4193**

3.2 Site Preparation - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	5.0771	54.6323	41.1053	0.0391		2.9387	2.9387		2.7036	2.7036	0.0000	4,065.0053	4,065.0053	1.2262		4,090.7544
Total	**5.0771**	**54.6323**	**41.1053**	**0.0391**	**7.0458**	**2.9387**	**9.9845**	**3.8730**	**2.7036**	**6.5766**	**0.0000**	**4,065.0053**	**4,065.0053**	**1.2262**		**4,090.7544**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0774	0.0941	1.2399	2.5300e-003	0.2012	1.4900e-003	0.2027	0.0534	1.3700e-003	0.0547		210.2000	210.2000	0.0104		210.4193
Total	**0.0774**	**0.0941**	**1.2399**	**2.5300e-003**	**0.2012**	**1.4900e-003**	**0.2027**	**0.0534**	**1.3700e-003**	**0.0547**		**210.2000**	**210.2000**	**0.0104**		**210.4193**

3.3 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4062	28.5063	18.5066	0.0268		1.9674	1.9674		1.8485	1.8485		2,669.2864	2,669.2864	0.6620		2,683.1890
Total	**3.4062**	**28.5063**	**18.5066**	**0.0268**		**1.9674**	**1.9674**		**1.8485**	**1.8485**		**2,669.2864**	**2,669.2864**	**0.6620**		**2,683.1890**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1695	1.7467	1.9845	4.3500e-003	0.1257	0.0289	0.1546	0.0359	0.0266	0.0625		436.0826	436.0826	3.1400e-003		436.1485
Worker	0.2839	0.3450	4.5464	9.2800e-003	0.7377	5.4700e-003	0.7432	0.1957	5.0300e-003	0.2007		770.7333	770.7333	0.0383		771.5374
Total	**0.4534**	**2.0917**	**6.5308**	**0.0136**	**0.8634**	**0.0344**	**0.8978**	**0.2315**	**0.0316**	**0.2631**		**1,206.8159**	**1,206.8159**	**0.0414**		**1,207.6859**

3.3 Building Construction - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4062	28.5063	18.5066	0.0268		1.9674	1.9674		1.8485	1.8485	0.0000	2,669.2864	2,669.2864	0.6620		2,683.1890
Total	**3.4062**	**28.5063**	**18.5066**	**0.0268**		**1.9674**	**1.9674**		**1.8485**	**1.8485**	**0.0000**	**2,669.2864**	**2,669.2864**	**0.6620**		**2,683.1890**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1695	1.7467	1.9845	4.3500e-003	0.1257	0.0289	0.1546	0.0359	0.0266	0.0625		436.0826	436.0826	3.1400e-003		436.1485
Worker	0.2839	0.3450	4.5464	9.2800e-003	0.7377	5.4700e-003	0.7432	0.1957	5.0300e-003	0.2007		770.7333	770.7333	0.0383		771.5374
Total	**0.4534**	**2.0917**	**6.5308**	**0.0136**	**0.8634**	**0.0344**	**0.8978**	**0.2315**	**0.0316**	**0.2631**		**1,206.8159**	**1,206.8159**	**0.0414**		**1,207.6859**

3.3 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1024	26.4057	18.1291	0.0268		1.7812	1.7812		1.6730	1.6730		2,639.8053	2,639.8053	0.6497		2,653.4490
Total	**3.1024**	**26.4057**	**18.1291**	**0.0268**		**1.7812**	**1.7812**		**1.6730**	**1.6730**		**2,639.8053**	**2,639.8053**	**0.6497**		**2,653.4490**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1566	1.5883	1.8828	4.3400e-003	0.1257	0.0258	0.1515	0.0359	0.0237	0.0596		428.9072	428.9072	3.0300e-003		428.9709
Worker	0.2523	0.3094	4.0838	9.2800e-003	0.7377	5.2700e-003	0.7430	0.1957	4.8600e-003	0.2005		740.5045	740.5045	0.0351		741.2417
Total	**0.4088**	**1.8977**	**5.9666**	**0.0136**	**0.8634**	**0.0311**	**0.8945**	**0.2315**	**0.0286**	**0.2601**		**1,169.4117**	**1,169.4117**	**0.0381**		**1,170.2126**

3.3 Building Construction - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1024	26.4057	18.1291	0.0268		1.7812	1.7812		1.6730	1.6730	0.0000	2,639.8053	2,639.8053	0.6497		2,653.4490
Total	**3.1024**	**26.4057**	**18.1291**	**0.0268**		**1.7812**	**1.7812**		**1.6730**	**1.6730**	**0.0000**	**2,639.8053**	**2,639.8053**	**0.6497**		**2,653.4490**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1566	1.5883	1.8828	4.3400e-003	0.1257	0.0258	0.1515	0.0359	0.0237	0.0596		428.9072	428.9072	3.0300e-003		428.9709
Worker	0.2523	0.3094	4.0838	9.2800e-003	0.7377	5.2700e-003	0.7430	0.1957	4.8600e-003	0.2005		740.5045	740.5045	0.0351		741.2417
Total	**0.4088**	**1.8977**	**5.9666**	**0.0136**	**0.8634**	**0.0311**	**0.8945**	**0.2315**	**0.0286**	**0.2601**		**1,169.4117**	**1,169.4117**	**0.0381**		**1,170.2126**

3.4 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9074	20.2964	14.7270	0.0223		1.1384	1.1384		1.0473	1.0473		2,281.0588	2,281.0588	0.6989		2,295.7360
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9074**	**20.2964**	**14.7270**	**0.0223**		**1.1384**	**1.1384**		**1.0473**	**1.0473**		**2,281.0588**	**2,281.0588**	**0.6989**		**2,295.7360**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0573	0.0703	0.9281	2.1100e-003	0.1677	1.2000e-003	0.1689	0.0445	1.1000e-003	0.0456		168.2965	168.2965	7.9800e-003		168.4640
Total	**0.0573**	**0.0703**	**0.9281**	**2.1100e-003**	**0.1677**	**1.2000e-003**	**0.1689**	**0.0445**	**1.1000e-003**	**0.0456**		**168.2965**	**168.2965**	**7.9800e-003**		**168.4640**

3.4 Paving - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9074	20.2964	14.7270	0.0223		1.1384	1.1384		1.0473	1.0473	0.0000	2,281.0588	2,281.0588	0.6989		2,295.7360
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9074**	**20.2964**	**14.7270**	**0.0223**		**1.1384**	**1.1384**		**1.0473**	**1.0473**	**0.0000**	**2,281.0588**	**2,281.0588**	**0.6989**		**2,295.7360**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0573	0.0703	0.9281	2.1100e-003	0.1677	1.2000e-003	0.1689	0.0445	1.1000e-003	0.0456		168.2965	168.2965	7.9800e-003		168.4640
Total	**0.0573**	**0.0703**	**0.9281**	**2.1100e-003**	**0.1677**	**1.2000e-003**	**0.1689**	**0.0445**	**1.1000e-003**	**0.0456**		**168.2965**	**168.2965**	**7.9800e-003**		**168.4640**

3.5 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	23.3379					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733		281.4481	281.4481	0.0297		282.0721
Total	**23.6702**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**		**281.4481**	**281.4481**	**0.0297**		**282.0721**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0497	0.0609	0.8044	1.8300e-003	0.1453	1.0400e-003	0.1464	0.0385	9.6000e-004	0.0395		145.8570	145.8570	6.9100e-003		146.0022
Total	**0.0497**	**0.0609**	**0.8044**	**1.8300e-003**	**0.1453**	**1.0400e-003**	**0.1464**	**0.0385**	**9.6000e-004**	**0.0395**		**145.8570**	**145.8570**	**6.9100e-003**		**146.0022**

3.5 Architectural Coating - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	23.3379					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733	0.0000	281.4481	281.4481	0.0297		282.0721
Total	**23.6702**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**	**0.0000**	**281.4481**	**281.4481**	**0.0297**		**282.0721**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0497	0.0609	0.8044	1.8300e-003	0.1453	1.0400e-003	0.1464	0.0385	9.6000e-004	0.0395		145.8570	145.8570	6.9100e-003		146.0022
Total	**0.0497**	**0.0609**	**0.8044**	**1.8300e-003**	**0.1453**	**1.0400e-003**	**0.1464**	**0.0385**	**9.6000e-004**	**0.0395**		**145.8570**	**145.8570**	**6.9100e-003**		**146.0022**

3.6 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.1946	0.0000	19.1946	4.7326	0.0000	4.7326			0.0000			0.0000
Off-Road	6.0991	69.5920	46.8050	0.0617		3.3172	3.3172		3.0518	3.0518		6,313.3690	6,313.3690	1.9344		6,353.9915
Total	**6.0991**	**69.5920**	**46.8050**	**0.0617**	**19.1946**	**3.3172**	**22.5118**	**4.7326**	**3.0518**	**7.7844**		**6,313.3690**	**6,313.3690**	**1.9344**		**6,353.9915**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0764	0.0937	1.2375	2.8100e-003	0.2236	1.6000e-003	0.2252	0.0593	1.4700e-003	0.0608		224.3953	224.3953	0.0106		224.6187
Total	**0.0764**	**0.0937**	**1.2375**	**2.8100e-003**	**0.2236**	**1.6000e-003**	**0.2252**	**0.0593**	**1.4700e-003**	**0.0608**		**224.3953**	**224.3953**	**0.0106**		**224.6187**

3.6 Grading - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.4859	0.0000	7.4859	1.8457	0.0000	1.8457			0.0000			0.0000
Off-Road	6.0991	69.5920	46.8050	0.0617		3.3172	3.3172		3.0518	3.0518	0.0000	6,313.3690	6,313.3690	1.9344		6,353.9915
Total	**6.0991**	**69.5920**	**46.8050**	**0.0617**	**7.4859**	**3.3172**	**10.8031**	**1.8457**	**3.0518**	**4.8975**	**0.0000**	**6,313.3690**	**6,313.3690**	**1.9344**		**6,353.9915**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0764	0.0937	1.2375	2.8100e-003	0.2236	1.6000e-003	0.2252	0.0593	1.4700e-003	0.0608		224.3953	224.3953	0.0106		224.6187
Total	**0.0764**	**0.0937**	**1.2375**	**2.8100e-003**	**0.2236**	**1.6000e-003**	**0.2252**	**0.0593**	**1.4700e-003**	**0.0608**		**224.3953**	**224.3953**	**0.0106**		**224.6187**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.0747	22.1170	84.6808	0.2048	13.3773	0.3052	13.6824	3.5728	0.2808	3.8536		17,462.0840	17,462.0840	0.6203		17,475.1109
Unmitigated	7.0747	22.1170	84.6808	0.2048	13.3773	0.3052	13.6824	3.5728	0.2808	3.8536		17,462.0840	17,462.0840	0.6203		17,475.1109

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,751.68	1,845.52	1604.48	5,959,708	5,959,708
Total	1,751.68	1,845.52	1,604.48	5,959,708	5,959,708

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
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.471808	0.065740	0.172776	0.155900	0.055970	0.009039	0.016651	0.041094	0.001122	0.001334	0.004921	0.000712	0.002932

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1836	1.5687	0.6675	0.0100		0.1268	0.1268		0.1268	0.1268		2,002.6151	2,002.6151	0.0384	0.0367	2,014.8027
NaturalGas Unmitigated	0.1836	1.5687	0.6675	0.0100		0.1268	0.1268		0.1268	0.1268		2,002.6151	2,002.6151	0.0384	0.0367	2,014.8027

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	17022.2	0.1836	1.5687	0.6675	0.0100		0.1268	0.1268		0.1268	0.1268		2,002.6151	2,002.6151	0.0384	0.0367	2,014.8027
Total		**0.1836**	**1.5687**	**0.6675**	**0.0100**		**0.1268**	**0.1268**		**0.1268**	**0.1268**		**2,002.6151**	**2,002.6151**	**0.0384**	**0.0367**	**2,014.8027**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	17.0222	0.1836	1.5687	0.6675	0.0100		0.1268	0.1268		0.1268	0.1268		2,002.6151	2,002.6151	0.0384	0.0367	2,014.8027
Total		**0.1836**	**1.5687**	**0.6675**	**0.0100**		**0.1268**	**0.1268**		**0.1268**	**0.1268**		**2,002.6151**	**2,002.6151**	**0.0384**	**0.0367**	**2,014.8027**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	55.9595	1.4020	107.8193	0.1479		14.1387	14.1387		14.1365	14.1365	1,723.5130	3,339.3336	5,062.8466	5.1673	0.1170	5,207.6233
Unmitigated	55.9595	1.4020	107.8193	0.1479		14.1387	14.1387		14.1365	14.1365	1,723.5130	3,339.3336	5,062.8466	5.1673	0.1170	5,207.6233

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7097					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.5578					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	48.2146	1.2233	92.4861	0.1471		14.0555	14.0555		14.0532	14.0532	1,723.5130	3,312.0000	5,035.5130	5.1399	0.1170	5,179.7136
Landscaping	0.4774	0.1787	15.3332	8.0000e-004		0.0833	0.0833		0.0833	0.0833		27.3336	27.3336	0.0274		27.9098
Total	**55.9595**	**1.4020**	**107.8193**	**0.1479**		**14.1387**	**14.1387**		**14.1365**	**14.1365**	**1,723.5130**	**3,339.3336**	**5,062.8466**	**5.1673**	**0.1170**	**5,207.6233**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Consumer Products	6.5578					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	48.2146	1.2233	92.4861	0.1471		14.0555	14.0555		14.0532	14.0532	1,723.5130	3,312.0000	5,035.5130	5.1399	0.1170	5,179.7136
Landscaping	0.4774	0.1787	15.3332	8.0000e-004		0.0833	0.0833		0.0833	0.0833		27.3336	27.3336	0.0274		27.9098
Architectural Coating	0.7097					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**55.9595**	**1.4020**	**107.8193**	**0.1479**		**14.1387**	**14.1387**		**14.1365**	**14.1365**	**1,723.5130**	**3,339.3336**	**5,062.8466**	**5.1673**	**0.1170**	**5,207.6233**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Vegetation

Wilson Creek Estates

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	184.00	Dwelling Unit	236.00	331,200.00	526

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Site acreage

Construction Phase - Project specific schedule

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Minimal amount of demolition

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Demolition -

Grading - Site acreage

Vehicle Trips - Project specific trips rates

Vechicle Emission Factors - Residential fleet mix

Vechicle Emission Factors - Residential fleet mix

Vechicle Emission Factors - Residential fleet mix

Land Use Change -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	330.00	111.00
tblConstructionPhase	NumDays	4,650.00	222.00
tblConstructionPhase	NumDays	465.00	19.00
tblConstructionPhase	NumDays	330.00	111.00
tblConstructionPhase	NumDays	180.00	20.00
tblConstructionPhase	PhaseEndDate	12/4/2017	6/30/2017
tblConstructionPhase	PhaseEndDate	6/5/2017	6/30/2017
tblConstructionPhase	PhaseEndDate	7/27/2017	8/24/2017
tblConstructionPhase	PhaseEndDate	12/4/2017	6/30/2017
tblConstructionPhase	PhaseStartDate	7/1/2017	1/27/2017
tblConstructionPhase	PhaseStartDate	7/29/2016	8/25/2016
tblConstructionPhase	PhaseStartDate	7/1/2017	7/29/2017
tblConstructionPhase	PhaseStartDate	7/1/2017	1/27/2017
tblGrading	AcresOfGrading	47.50	236.00
tblLandUse	LotAcreage	59.74	236.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	10.08	10.03
tblVehicleTrips	SU_TR	8.77	8.72
tblVehicleTrips	WD_TR	9.57	9.52

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					
2016	0.2281	1.9604	1.5663	2.2400e-003	0.2216	0.1215	0.3431	0.1103	0.1135	0.2238	0.0000	197.9156	197.9156	0.0406	0.0000	198.7677
2017	1.7104	3.7646	3.0191	4.8000e-003	0.2566	0.2223	0.4788	0.0648	0.2075	0.2723	0.0000	421.0946	421.0946	0.0948	0.0000	423.0846
Total	**1.9385**	**5.7250**	**4.5855**	**7.0400e-003**	**0.4782**	**0.3438**	**0.8219**	**0.1751**	**0.3210**	**0.4962**	**0.0000**	**619.0102**	**619.0102**	**0.1353**	**0.0000**	**621.8522**

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					
2016	0.2281	1.9604	1.5663	2.2400e-003	0.1114	0.1215	0.2329	0.0497	0.1135	0.1633	0.0000	197.9154	197.9154	0.0406	0.0000	198.7675
2017	1.7104	3.7646	3.0191	4.8000e-003	0.1453	0.2223	0.3676	0.0374	0.2075	0.2449	0.0000	421.0942	421.0942	0.0948	0.0000	423.0842
Total	**1.9385**	**5.7250**	**4.5855**	**7.0400e-003**	**0.2567**	**0.3438**	**0.6005**	**0.0871**	**0.3210**	**0.4081**	**0.0000**	**619.0096**	**619.0096**	**0.1353**	**0.0000**	**621.8517**

	ROG	**NOx**	**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**	**46.31**	**0.00**	**26.94**	**50.25**	**0.00**	**17.74**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.9887	0.0376	3.0727	1.9400e-003		0.1861	0.1861		0.1861	0.1861	19.5443	40.6570	60.2013	0.0614	1.3300e-003	61.9019
Energy	0.0335	0.2863	0.1218	1.8300e-003		0.0232	0.0232		0.0232	0.0232	0.0000	735.9246	735.9246	0.0249	9.9200e-003	739.5249
Mobile	1.1342	4.0588	13.9059	0.0332	2.2576	0.0525	2.3102	0.6039	0.0483	0.6522	0.0000	2,573.8292	2,573.8292	0.0967	0.0000	2,575.8603
Waste						0.0000	0.0000		0.0000	0.0000	43.7770	0.0000	43.7770	2.5872	0.0000	98.1072
Water						0.0000	0.0000		0.0000	0.0000	3.8034	68.6995	72.5029	0.3938	9.8800e-003	83.8346
Total	**3.1564**	**4.3827**	**17.1004**	**0.0369**	**2.2576**	**0.2618**	**2.5194**	**0.6039**	**0.2575**	**0.8614**	**67.1247**	**3,419.1104**	**3,486.2351**	**3.1640**	**0.0211**	**3,559.2288**

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	1.9887	0.0376	3.0727	1.9400e-003		0.1861	0.1861		0.1861	0.1861	19.5443	40.6570	60.2013	0.0614	1.3300e-003	61.9019
Energy	0.0335	0.2863	0.1218	1.8300e-003		0.0232	0.0232		0.0232	0.0232	0.0000	735.9246	735.9246	0.0249	9.9200e-003	739.5249
Mobile	1.1342	4.0588	13.9059	0.0332	2.2576	0.0525	2.3102	0.6039	0.0483	0.6522	0.0000	2,573.8292	2,573.8292	0.0967	0.0000	2,575.8603
Waste						0.0000	0.0000		0.0000	0.0000	43.7770	0.0000	43.7770	2.5872	0.0000	98.1072
Water						0.0000	0.0000		0.0000	0.0000	3.8034	68.6995	72.5029	0.3937	9.8600e-003	83.8285
Total	**3.1564**	**4.3827**	**17.1004**	**0.0369**	**2.2576**	**0.2618**	**2.5194**	**0.6039**	**0.2575**	**0.8614**	**67.1247**	**3,419.1104**	**3,486.2351**	**3.1639**	**0.0211**	**3,559.2227**

	ROG	NOx	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**	**0.09**	**0.00**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
Vegetation Land Change	-189.6400
Total	**-189.6400**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	7/1/2016	7/28/2016	5	20	
2	Building Construction	Building Construction	8/25/2016	6/30/2017	5	222	
3	Paving	Paving	1/27/2017	6/30/2017	5	111	
4	Architectural Coating	Architectural Coating	1/27/2017	6/30/2017	5	111	
5	Grading	Grading	7/29/2017	8/24/2017	5	19	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 236

Acres of Paving: 0

Residential Indoor: 670,680; Residential Outdoor: 223,560; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	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
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	66.00	20.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2016

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	0.0508	0.5463	0.4111	3.9000e-004		0.0294	0.0294		0.0270	0.0270	0.0000	36.8771	36.8771	0.0111	0.0000	37.1107
Total	**0.0508**	**0.5463**	**0.4111**	**3.9000e-004**	**0.1807**	**0.0294**	**0.2101**	**0.0993**	**0.0270**	**0.1264**	**0.0000**	**36.8771**	**36.8771**	**0.0111**	**0.0000**	**37.1107**

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	6.9000e-004	1.0500e-003	0.0110	2.0000e-005	1.9700e-003	1.0000e-005	1.9900e-003	5.2000e-004	1.0000e-005	5.4000e-004	0.0000	1.7638	1.7638	9.0000e-005	0.0000	1.7658
Total	**6.9000e-004**	**1.0500e-003**	**0.0110**	**2.0000e-005**	**1.9700e-003**	**1.0000e-005**	**1.9900e-003**	**5.2000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.7638**	**1.7638**	**9.0000e-005**	**0.0000**	**1.7658**

3.2 Site Preparation - 2016

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					0.0705	0.0000	0.0705	0.0387	0.0000	0.0387	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0508	0.5463	0.4111	3.9000e-004		0.0294	0.0294		0.0270	0.0270	0.0000	36.8771	36.8771	0.0111	0.0000	37.1107
Total	**0.0508**	**0.5463**	**0.4111**	**3.9000e-004**	**0.0705**	**0.0294**	**0.0999**	**0.0387**	**0.0270**	**0.0658**	**0.0000**	**36.8771**	**36.8771**	**0.0111**	**0.0000**	**37.1107**

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	6.9000e-004	1.0500e-003	0.0110	2.0000e-005	1.9700e-003	1.0000e-005	1.9900e-003	5.2000e-004	1.0000e-005	5.4000e-004	0.0000	1.7638	1.7638	9.0000e-005	0.0000	1.7658
Total	**6.9000e-004**	**1.0500e-003**	**0.0110**	**2.0000e-005**	**1.9700e-003**	**1.0000e-005**	**1.9900e-003**	**5.2000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.7638**	**1.7638**	**9.0000e-005**	**0.0000**	**1.7658**

3.3 Building Construction - 2016

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	0.1567	1.3113	0.8513	1.2300e-003		0.0905	0.0905		0.0850	0.0850	0.0000	111.3907	111.3907	0.0276	0.0000	111.9708
Total	**0.1567**	**1.3113**	**0.8513**	**1.2300e-003**		**0.0905**	**0.0905**		**0.0850**	**0.0850**	**0.0000**	**111.3907**	**111.3907**	**0.0276**	**0.0000**	**111.9708**

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	8.2500e-003	0.0841	0.1074	2.0000e-004	5.6900e-003	1.3400e-003	7.0200e-003	1.6300e-003	1.2300e-003	2.8600e-003	0.0000	18.1339	18.1339	1.3000e-004	0.0000	18.1366
Worker	0.0117	0.0176	0.1856	3.9000e-004	0.0333	2.5000e-004	0.0335	8.8400e-003	2.3000e-004	9.0700e-003	0.0000	29.7502	29.7502	1.6000e-003	0.0000	29.7837
Total	**0.0199**	**0.1017**	**0.2930**	**5.9000e-004**	**0.0390**	**1.5900e-003**	**0.0406**	**0.0105**	**1.4600e-003**	**0.0119**	**0.0000**	**47.8840**	**47.8840**	**1.7300e-003**	**0.0000**	**47.9203**

3.3 Building Construction - 2016

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	0.1567	1.3113	0.8513	1.2300e-003		0.0905	0.0905		0.0850	0.0850	0.0000	111.3905	111.3905	0.0276	0.0000	111.9707
Total	**0.1567**	**1.3113**	**0.8513**	**1.2300e-003**		**0.0905**	**0.0905**		**0.0850**	**0.0850**	**0.0000**	**111.3905**	**111.3905**	**0.0276**	**0.0000**	**111.9707**

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	8.2500e-003	0.0841	0.1074	2.0000e-004	5.6900e-003	1.3400e-003	7.0200e-003	1.6300e-003	1.2300e-003	2.8600e-003	0.0000	18.1339	18.1339	1.3000e-004	0.0000	18.1366
Worker	0.0117	0.0176	0.1856	3.9000e-004	0.0333	2.5000e-004	0.0335	8.8400e-003	2.3000e-004	9.0700e-003	0.0000	29.7502	29.7502	1.6000e-003	0.0000	29.7837
Total	**0.0199**	**0.1017**	**0.2930**	**5.9000e-004**	**0.0390**	**1.5900e-003**	**0.0406**	**0.0105**	**1.4600e-003**	**0.0119**	**0.0000**	**47.8840**	**47.8840**	**1.7300e-003**	**0.0000**	**47.9203**

3.3 Building Construction - 2017

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	0.2017	1.7164	1.1784	1.7400e-003		0.1158	0.1158		0.1087	0.1087	0.0000	155.6614	155.6614	0.0383	0.0000	156.4660
Total	**0.2017**	**1.7164**	**1.1784**	**1.7400e-003**		**0.1158**	**0.1158**		**0.1087**	**0.1087**	**0.0000**	**155.6614**	**155.6614**	**0.0383**	**0.0000**	**156.4660**

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	0.0108	0.1080	0.1448	2.8000e-004	8.0400e-003	1.6800e-003	9.7200e-003	2.3000e-003	1.5500e-003	3.8500e-003	0.0000	25.2021	25.2021	1.8000e-004	0.0000	25.2059
Worker	0.0146	0.0223	0.2348	5.6000e-004	0.0470	3.4000e-004	0.0474	0.0125	3.2000e-004	0.0128	0.0000	40.3845	40.3845	2.0700e-003	0.0000	40.4280
Total	**0.0253**	**0.1303**	**0.3796**	**8.4000e-004**	**0.0551**	**2.0200e-003**	**0.0571**	**0.0148**	**1.8700e-003**	**0.0167**	**0.0000**	**65.5865**	**65.5865**	**2.2500e-003**	**0.0000**	**65.6338**

3.3 Building Construction - 2017

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	0.2017	1.7164	1.1784	1.7400e-003		0.1158	0.1158		0.1087	0.1087	0.0000	155.6612	155.6612	0.0383	0.0000	156.4658
Total	**0.2017**	**1.7164**	**1.1784**	**1.7400e-003**		**0.1158**	**0.1158**		**0.1087**	**0.1087**	**0.0000**	**155.6612**	**155.6612**	**0.0383**	**0.0000**	**156.4658**

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	0.0108	0.1080	0.1448	2.8000e-004	8.0400e-003	1.6800e-003	9.7200e-003	2.3000e-003	1.5500e-003	3.8500e-003	0.0000	25.2021	25.2021	1.8000e-004	0.0000	25.2059
Worker	0.0146	0.0223	0.2348	5.6000e-004	0.0470	3.4000e-004	0.0474	0.0125	3.2000e-004	0.0128	0.0000	40.3845	40.3845	2.0700e-003	0.0000	40.4280
Total	**0.0253**	**0.1303**	**0.3796**	**8.4000e-004**	**0.0551**	**2.0200e-003**	**0.0571**	**0.0148**	**1.8700e-003**	**0.0167**	**0.0000**	**65.5865**	**65.5865**	**2.2500e-003**	**0.0000**	**65.6338**

3.4 Paving - 2017

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	0.1059	1.1265	0.8174	1.2400e-003		0.0632	0.0632		0.0581	0.0581	0.0000	114.8485	114.8485	0.0352	0.0000	115.5874
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1059**	**1.1265**	**0.8174**	**1.2400e-003**		**0.0632**	**0.0632**		**0.0581**	**0.0581**	**0.0000**	**114.8485**	**114.8485**	**0.0352**	**0.0000**	**115.5874**

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	2.8300e-003	4.3300e-003	0.0456	1.1000e-004	9.1300e-003	7.0000e-005	9.1900e-003	2.4200e-003	6.0000e-005	2.4900e-003	0.0000	7.8369	7.8369	4.0000e-004	0.0000	7.8453
Total	**2.8300e-003**	**4.3300e-003**	**0.0456**	**1.1000e-004**	**9.1300e-003**	**7.0000e-005**	**9.1900e-003**	**2.4200e-003**	**6.0000e-005**	**2.4900e-003**	**0.0000**	**7.8369**	**7.8369**	**4.0000e-004**	**0.0000**	**7.8453**

3.4 Paving - 2017

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	0.1059	1.1265	0.8174	1.2400e-003		0.0632	0.0632		0.0581	0.0581	0.0000	114.8483	114.8483	0.0352	0.0000	115.5873
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1059**	**1.1265**	**0.8174**	**1.2400e-003**		**0.0632**	**0.0632**		**0.0581**	**0.0581**	**0.0000**	**114.8483**	**114.8483**	**0.0352**	**0.0000**	**115.5873**

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	2.8300e-003	4.3300e-003	0.0456	1.1000e-004	9.1300e-003	7.0000e-005	9.1900e-003	2.4200e-003	6.0000e-005	2.4900e-003	0.0000	7.8369	7.8369	4.0000e-004	0.0000	7.8453
Total	**2.8300e-003**	**4.3300e-003**	**0.0456**	**1.1000e-004**	**9.1300e-003**	**7.0000e-005**	**9.1900e-003**	**2.4200e-003**	**6.0000e-005**	**2.4900e-003**	**0.0000**	**7.8369**	**7.8369**	**4.0000e-004**	**0.0000**	**7.8453**

3.5 Architectural Coating - 2017

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	1.2953					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0184	0.1213	0.1037	1.6000e-004		9.6200e-003	9.6200e-003		9.6200e-003	9.6200e-003	0.0000	14.1706	14.1706	1.5000e-003	0.0000	14.2020
Total	**1.3137**	**0.1213**	**0.1037**	**1.6000e-004**		**9.6200e-003**	**9.6200e-003**		**9.6200e-003**	**9.6200e-003**	**0.0000**	**14.1706**	**14.1706**	**1.5000e-003**	**0.0000**	**14.2020**

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	2.4500e-003	3.7500e-003	0.0395	9.0000e-005	7.9100e-003	6.0000e-005	7.9700e-003	2.1000e-003	5.0000e-005	2.1500e-003	0.0000	6.7919	6.7919	3.5000e-004	0.0000	6.7993
Total	**2.4500e-003**	**3.7500e-003**	**0.0395**	**9.0000e-005**	**7.9100e-003**	**6.0000e-005**	**7.9700e-003**	**2.1000e-003**	**5.0000e-005**	**2.1500e-003**	**0.0000**	**6.7919**	**6.7919**	**3.5000e-004**	**0.0000**	**6.7993**

3.5 Architectural Coating - 2017

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	1.2953					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0184	0.1213	0.1037	1.6000e-004		9.6200e-003	9.6200e-003		9.6200e-003	9.6200e-003	0.0000	14.1705	14.1705	1.5000e-003	0.0000	14.2020
Total	**1.3137**	**0.1213**	**0.1037**	**1.6000e-004**		**9.6200e-003**	**9.6200e-003**		**9.6200e-003**	**9.6200e-003**	**0.0000**	**14.1705**	**14.1705**	**1.5000e-003**	**0.0000**	**14.2020**

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	2.4500e-003	3.7500e-003	0.0395	9.0000e-005	7.9100e-003	6.0000e-005	7.9700e-003	2.1000e-003	5.0000e-005	2.1500e-003	0.0000	6.7919	6.7919	3.5000e-004	0.0000	6.7993
Total	**2.4500e-003**	**3.7500e-003**	**0.0395**	**9.0000e-005**	**7.9100e-003**	**6.0000e-005**	**7.9700e-003**	**2.1000e-003**	**5.0000e-005**	**2.1500e-003**	**0.0000**	**6.7919**	**6.7919**	**3.5000e-004**	**0.0000**	**6.7993**

3.6 Grading - 2017

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					0.1824	0.0000	0.1824	0.0450	0.0000	0.0450	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0579	0.6611	0.4447	5.9000e-004		0.0315	0.0315		0.0290	0.0290	0.0000	54.4102	54.4102	0.0167	0.0000	54.7603
Total	**0.0579**	**0.6611**	**0.4447**	**5.9000e-004**	**0.1824**	**0.0315**	**0.2139**	**0.0450**	**0.0290**	**0.0740**	**0.0000**	**54.4102**	**54.4102**	**0.0167**	**0.0000**	**54.7603**

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	6.5000e-004	9.9000e-004	0.0104	2.0000e-005	2.0800e-003	2.0000e-005	2.1000e-003	5.5000e-004	1.0000e-005	5.7000e-004	0.0000	1.7886	1.7886	9.0000e-005	0.0000	1.7905
Total	**6.5000e-004**	**9.9000e-004**	**0.0104**	**2.0000e-005**	**2.0800e-003**	**2.0000e-005**	**2.1000e-003**	**5.5000e-004**	**1.0000e-005**	**5.7000e-004**	**0.0000**	**1.7886**	**1.7886**	**9.0000e-005**	**0.0000**	**1.7905**

3.6 Grading - 2017

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					0.0711	0.0000	0.0711	0.0175	0.0000	0.0175	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0579	0.6611	0.4447	5.9000e-004		0.0315	0.0315		0.0290	0.0290	0.0000	54.4102	54.4102	0.0167	0.0000	54.7603
Total	**0.0579**	**0.6611**	**0.4447**	**5.9000e-004**	**0.0711**	**0.0315**	**0.1026**	**0.0175**	**0.0290**	**0.0465**	**0.0000**	**54.4102**	**54.4102**	**0.0167**	**0.0000**	**54.7603**

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	6.5000e-004	9.9000e-004	0.0104	2.0000e-005	2.0800e-003	2.0000e-005	2.1000e-003	5.5000e-004	1.0000e-005	5.7000e-004	0.0000	1.7886	1.7886	9.0000e-005	0.0000	1.7905
Total	**6.5000e-004**	**9.9000e-004**	**0.0104**	**2.0000e-005**	**2.0800e-003**	**2.0000e-005**	**2.1000e-003**	**5.5000e-004**	**1.0000e-005**	**5.7000e-004**	**0.0000**	**1.7886**	**1.7886**	**9.0000e-005**	**0.0000**	**1.7905**

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	1.1342	4.0588	13.9059	0.0332	2.2576	0.0525	2.3102	0.6039	0.0483	0.6522	0.0000	2,573.8292	2,573.8292	0.0967	0.0000	2,575.8603
Unmitigated	1.1342	4.0588	13.9059	0.0332	2.2576	0.0525	2.3102	0.6039	0.0483	0.6522	0.0000	2,573.8292	2,573.8292	0.0967	0.0000	2,575.8603

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,751.68	1,845.52	1604.48	5,959,708	5,959,708
Total	1,751.68	1,845.52	1,604.48	5,959,708	5,959,708

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
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.471808	0.065740	0.172776	0.155900	0.055970	0.009039	0.016651	0.041094	0.001122	0.001334	0.004921	0.000712	0.002932

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	404.3692	404.3692	0.0186	3.8500e-003	405.9517
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	404.3692	404.3692	0.0186	3.8500e-003	405.9517
NaturalGas Mitigated	0.0335	0.2863	0.1218	1.8300e-003		0.0232	0.0232		0.0232	0.0232	0.0000	331.5554	331.5554	6.3500e-003	6.0800e-003	333.5732
NaturalGas Unmitigated	0.0335	0.2863	0.1218	1.8300e-003		0.0232	0.0232		0.0232	0.0232	0.0000	331.5554	331.5554	6.3500e-003	6.0800e-003	333.5732

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					
Single Family Housing	6.21311e+006	0.0335	0.2863	0.1218	1.8300e-003		0.0232	0.0232		0.0232	0.0232	0.0000	331.5554	331.5554	6.3500e-003	6.0800e-003	333.5732
Total		**0.0335**	**0.2863**	**0.1218**	**1.8300e-003**		**0.0232**	**0.0232**		**0.0232**	**0.0232**	**0.0000**	**331.5554**	**331.5554**	**6.3500e-003**	**6.0800e-003**	**333.5732**

5.2 Energy by Land Use - NaturalGas

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					
Single Family Housing	6.21311e+006	0.0335	0.2863	0.1218	1.8300e-003		0.0232	0.0232		0.0232	0.0232	0.0000	331.5554	331.5554	6.3500e-003	6.0800e-003	333.5732
Total		**0.0335**	**0.2863**	**0.1218**	**1.8300e-003**		**0.0232**	**0.0232**		**0.0232**	**0.0232**	**0.0000**	**331.5554**	**331.5554**	**6.3500e-003**	**6.0800e-003**	**333.5732**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	1.41305e+006	404.3692	0.0186	3.8500e-003	405.9517
Total		**404.3692**	**0.0186**	**3.8500e-003**	**405.9517**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	1.41305e+006	404.3692	0.0186	3.8500e-003	405.9517
Total		**404.3692**	**0.0186**	**3.8500e-003**	**405.9517**

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	1.9887	0.0376	3.0727	1.9400e-003		0.1861	0.1861		0.1861	0.1861	19.5443	40.6570	60.2013	0.0614	1.3300e-003	61.9019
Unmitigated	1.9887	0.0376	3.0727	1.9400e-003		0.1861	0.1861		0.1861	0.1861	19.5443	40.6570	60.2013	0.0614	1.3300e-003	61.9019

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	0.1295					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.1968					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.6027	0.0153	1.1561	1.8400e-003		0.1757	0.1757		0.1757	0.1757	19.5443	37.5575	57.1018	0.0583	1.3300e-003	58.7370
Landscaping	0.0597	0.0223	1.9166	1.0000e-004		0.0104	0.0104		0.0104	0.0104	0.0000	3.0996	3.0996	3.1100e-003	0.0000	3.1649
Total	**1.9887**	**0.0376**	**3.0727**	**1.9400e-003**		**0.1861**	**0.1861**		**0.1861**	**0.1861**	**19.5443**	**40.6570**	**60.2013**	**0.0614**	**1.3300e-003**	**61.9019**

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	0.1295					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.1968					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.6027	0.0153	1.1561	1.8400e-003		0.1757	0.1757		0.1757	0.1757	19.5443	37.5575	57.1018	0.0583	1.3300e-003	58.7370
Landscaping	0.0597	0.0223	1.9166	1.0000e-004		0.0104	0.0104		0.0104	0.0104	0.0000	3.0996	3.0996	3.1100e-003	0.0000	3.1649
Total	**1.9887**	**0.0376**	**3.0727**	**1.9400e-003**		**0.1861**	**0.1861**		**0.1861**	**0.1861**	**19.5443**	**40.6570**	**60.2013**	**0.0614**	**1.3300e-003**	**61.9019**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	72.5029	0.3937	9.8600e-003	83.8285
Unmitigated	72.5029	0.3938	9.8800e-003	83.8346

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	11.9883 / 7.55787	72.5029	0.3938	9.8800e-003	83.8346
Total		**72.5029**	**0.3938**	**9.8800e-003**	**83.8346**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	11.9883 / 7.55787	72.5029	0.3937	9.8600e-003	83.8285
Total		**72.5029**	**0.3937**	**9.8600e-003**	**83.8285**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	43.7770	2.5872	0.0000	98.1072
Unmitigated	43.7770	2.5872	0.0000	98.1072

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	215.66	43.7770	2.5872	0.0000	98.1072
Total		**43.7770**	**2.5872**	**0.0000**	**98.1072**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	215.66	43.7770	2.5872	0.0000	98.1072
Total		**43.7770**	**2.5872**	**0.0000**	**98.1072**

9.0 Operational Offroad

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

10.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-189.6400	0.0000	0.0000	-189.6400

10.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Grassland	236 / 192	-189.6400	0.0000	0.0000	-189.6400
Total		**-189.6400**	**0.0000**	**0.0000**	**-189.6400**