KUNZMAN ASSOCIATES, INC.

HAWKS RIDGE PROJECT

AIR QUALITY AND GLOBAL CLIMATE CHANGE IMPACT ANALYSIS

November 5, 2015

Traffic Engineering | Transportation Planning | Parking | Noise/Vibration | Expert Witness
Air Quality | Global Climate Change | Health Risk Assessment

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I. Introduction and Setting

A. Purpose and Objectives

This study was performed to address the possibility of regional and local air quality impacts, and global climate change impacts, from air emissions. The objectives of the study include:

- documentation of the atmospheric setting
- discussion of criteria pollutants and greenhouse gases
- discussion of the air quality and global climate change regulatory framework
- discussion of the air quality, greenhouse gases, and cancer risk thresholds of significance
- analysis of the construction related air quality and greenhouse gas emissions
- analysis of the operations related air quality and greenhouse gas emissions
- analysis of the conformity of the proposed project with the MDAQMD Attainment Plans
- recommendations for mitigation measures

The Town of Yucca Valley is the lead agency responsible for preparation of this air quality analysis, in accordance with the California Environmental Quality Act authorizing legislation. Although this is a technical report, every effort has been made to write the report clearly and concisely. To assist the reader with terms unique to air quality and global climate change, a definition of terms has been provided in Appendix A.

B. Project Location

The proposed project is located west of Fairview Drive and north of Pinon Drive in the Town of Yucca Valley. The Town of Yucca Valley General Plan Land Use designation for the site is Rural Residential. The site is currently vacant. A flood channel runs adjacent and parallel to the southern boundary of the project site. The vicinity map showing the project location is provided on Figure 1.

C. Project Description

The project proposes to construct four single-family detached residential dwelling units. The total project site is 12.96 acres within the applicant's gross parcel of 60.62 acres. Approximately 48.28 acres of the site will be left undisturbed as a remainder parcel and a road dedication will occupy 0.03 acres of the site. Figure 2 illustrates the project site plan.

D. Sensitive Receptors in Project Vicinity

For the purposes of a CEQA analysis, the MDAQMD considers a sensitive receptor to be a receptor such as a residence, school, daycare center, playgrounds, and medical facilities where children are present or that it is possible that an individual could remain at the location for 24 hours. Commercial and industrial facilities are not included in the definition

of sensitive receptor because employees do not typically remain on-site for a full 24 hours, but are present for shorter periods of time, such as eight hours.

Currently, the area is mostly rural, the nearest sensitive receptors to the project site are single-family detached residential dwelling units located approximately 400 feet east of the project site. Other single-family detached residential dwelling units lie south of the project site approximately 700 feet from the planned development. The next nearest sensitive receptor would be the single-family detached residential dwelling units located approximately 0.4 miles to the southwest of the project site. The majority of the area surrounding the project site is vacant land.

E. Executive Summary of Findings

Construction-Source Emissions
Project construction-source emissions would not exceed applicable construction thresholds of significance established by the MDAQMD.

As discussed herein, the project will comply with all applicable MDAQMD construction-source emission reduction rules and guidelines. Project construction source emissions would not cause or substantively contribute to violation of the California Ambient Air Quality Standards (CAAQS) or National Ambient Air Quality Standards (NAAQS). Mitigation measure 1 has been included to ensure that all applicable MDAQMD Rules and Regulations are complied with during construction.

Established requirements addressing construction equipment operations, and construction material use, storage, and disposal requirements act to minimize odor impacts that may result from construction activities. Moreover, construction-source odor emissions would be temporary, short-term, and intermittent in nature and would not result in persistent impacts that would affect substantial numbers of people. Potential construction-source odor impacts are therefore considered less-than-significant.

Operational-Source Emissions
The project operational-sourced emissions would not exceed applicable operational thresholds of significance established by the MDAQMD.

The project's operational source emissions meet MDAQMD thresholds and will not result in a significant cumulative impact. The project does not propose any such uses or activities that would result in potentially significant operational-source odor impacts. Potential operational-source odor impacts are therefore considered less-than significant. Project-related GHG emissions are also considered to be less than significant.

Figure 1
Project Location Map

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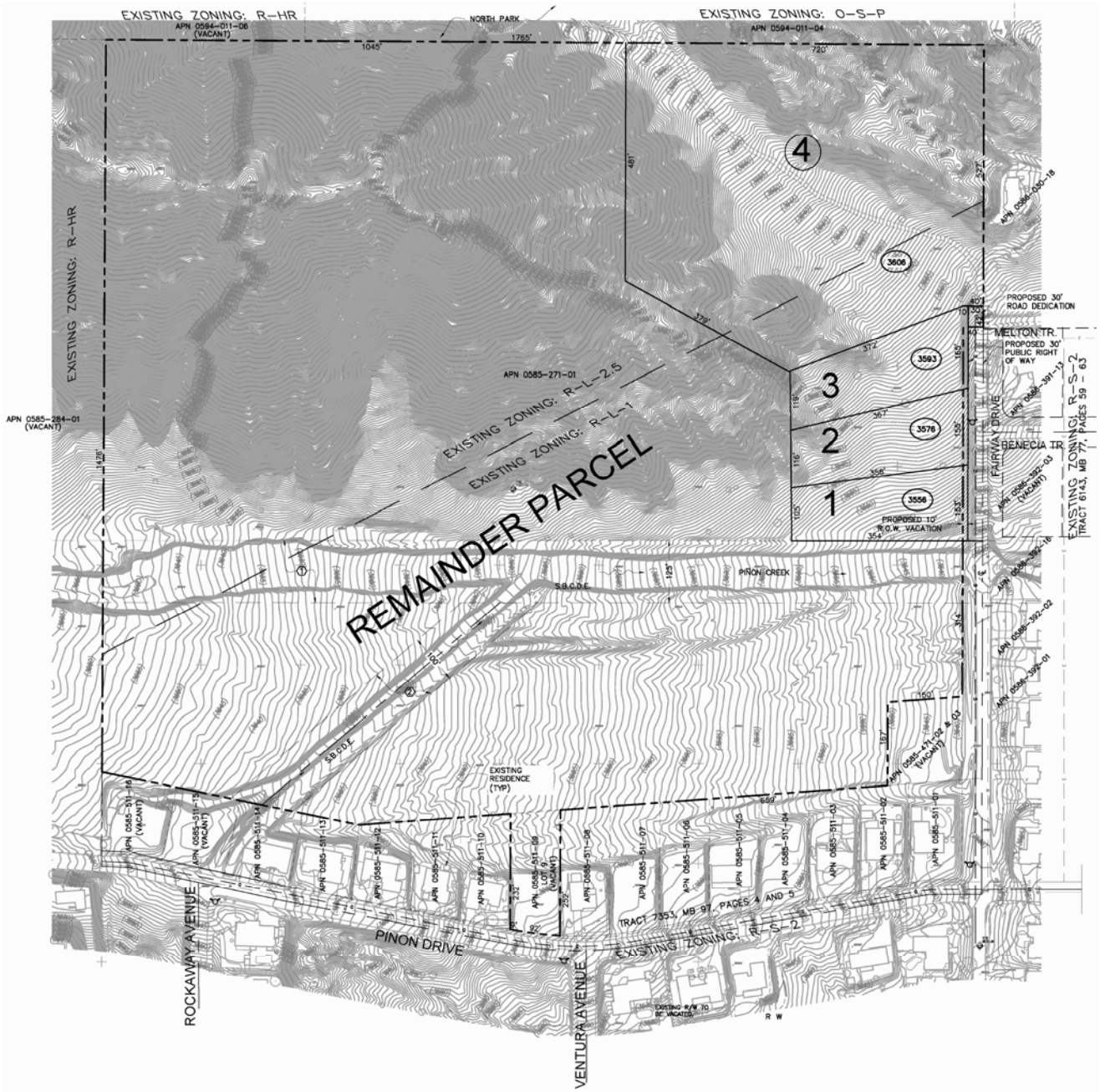
Figure 2
Site Plan



II. Atmospheric Setting

A. Local Air Quality

The project site is located within the southern portion of San Bernardino County, which is part of the Mojave Desert Air Basin (MDAB) The MDAB is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains which dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada Mountains to the north; air masses pushed onshore in southern California by differential heating are channeled through the MDAB. The MDAB is separated from the southern California coastal and central California valley regions by mountains (highest elevation approximately 10,000 feet), whose passes form the main channels for these air masses. The Antelope Valley is bordered in the northwest by the Tehachapi Mountains, separated from the Sierra Nevada's in the north by the Tehachapi Pass (3,800 foot elevation). The Antelope Valley is bordered in the south by the San Gabriel Mountains, bisected by Soledad Canyon (3,300 ft). The Mojave Desert is bordered in the southwest by the San Bernardino Mountains, separated from the San Gabriel's by the Cajon Pass (4,200 feet). A lesser channel lies between the San Bernardino Mountains and the Little San Bernardino Mountains (the Morongo Valley).

The Palo Verde Valley portion of the Mojave Desert lies in the low desert, at the eastern end of a series of valleys (notably the Coachella Valley) whose primary channel is the San Gorgonio Pass (2,300 feet) between the San Bernardino and San Jacinto Mountains.

During the summer the MDAB is generally influenced by a Pacific Subtropical High cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time the reach the desert. Most desert moisture arrives from infrequent warm, moist and unstable air masses from the south. The MDAB averages between three and seven inches of precipitation per year (from 16 to 30 days with at least 0.01 inches of precipitation). The MDAB is classified as a dry-hot desert climate (BWh), with portions classified as dry-very hot desert (BWhh), to indicate at least three months have maximum average temperatures over 100.4° F.

The temperature and precipitation levels for Joshua Tree, the closest location with weather data to the Town of Yucca Valley, are shown below in Table 1. Table 1 shows that July is typically the warmest month and December is typically the coolest month. Rainfall in the project area varies considerably in both time and space. Almost all the annual rainfall comes from the fringes of mid-latitude storms from late November to early March, with summers being almost completely dry.

Table 1

Joshua Tree Monthly Climate Data[1]

Descriptor	Month of Year											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Max. Temperature	60.6	59.9	67.6	75.4	86.2	93.9	101.3	99.4	94.3	81.6	67.9	59.1
Avg. Min. Temperature	38.3	37.5	39.6	45.3	53.8	59.5	70.6	68.3	63	53.8	42.5	36.8
Avg. Total Precipitation (in.)	2.08	0.81	0.12	0.03	0.04	0.01	0.00	0.05	0.02	0.15	0.36	1.22

[1] Source: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca4405

III. Pollutants

Pollutants are generally classified as either criteria pollutants or non-criteria pollutants. Federal ambient air quality standards have been established for criteria pollutants, whereas no ambient standards have been established for non-criteria pollutants. For some criteria pollutants, separate standards have been set for different periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values (such as protection of crops, protection of materials, or avoidance of nuisance conditions). A summary of federal and state ambient air quality standards is provided in the Regulatory Framework section.

A. Criteria Pollutants

The criteria pollutants consist of: ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, lead, and particulate matter. These pollutants can harm your health and the environment, and cause property damage. The Environmental Protection Agency (EPA) calls these pollutants "criteria" air pollutants because it regulates them by developing human health-based and/or environmentally-based criteria for setting permissible levels. The following provides descriptions of each of the criteria pollutants.

1. Nitrogen Dioxide (NO_2)

Nitrogen Oxides (NOx) is the generic term for a group of highly reactive gases which contain nitrogen and oxygen. While most NOx are colorless and odorless, concentrations of nitrogen dioxide (NO_2) can often be seen as a reddish-brown layer over many urban areas. NOx form when fuel is burned at high temperatures, as in a combustion process. The primary manmade sources of NOx are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuel. NOx reacts with other pollutants to form, ground-level ozone, nitrate particles, acid aerosols, as well as NO_2, which cause respiratory problems. NOx and the pollutants formed from NOx can be transported over long distances, following the patterns of prevailing winds. Therefore controlling NOx is often most effective if done from a regional perspective, rather than focusing on the nearest sources.

2. Ozone (O_3)

Ozone is not usually emitted directly into the air but at ground-level is created by a chemical reaction between NOx and volatile organic compounds (VOC) in the presence of sunlight. Motor vehicle exhaust, industrial emissions, gasoline vapors, chemical solvents as well as natural sources emit NOx and VOC that help form ozone. Ground-level ozone is the primary constituent of smog. Sunlight and hot weather cause ground-level ozone to form with the greatest concentrations usually occurring downwind from urban areas. Ozone is subsequently considered a regional pollutant. Ground-level ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Because NOx and VOC are ozone precursors, the health effects associated

with ozone are also indirect health effects associated with significant levels of NOx and VOC emissions.

3. Carbon Monoxide (CO)

Carbon monoxide (CO) is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes about 56 percent of all CO emissions nationwide. In cities, 85 to 95 percent of all CO emissions may come from motor vehicle exhaust. Other sources of CO emissions include industrial processes (such as metals processing and chemical manufacturing), residential wood burning, and natural sources such as forest fires. Woodstoves, gas stoves, cigarette smoke, and unvented gas and kerosene space heaters are indoor sources of CO. The highest levels of CO in the outside air typically occur during the colder months of the year when inversion conditions are more frequent. The air pollution becomes trapped near the ground beneath a layer of warm air. CO is described as having only a local influence because it dissipates quickly. Since CO concentrations are strongly associated with motor vehicle emissions, high CO concentrations generally occur in the immediate vicinity of roadways with high traffic volumes and traffic congestion, active parking lots, and in automobile tunnels. Areas adjacent to heavily traveled and congested intersections are particularly susceptible to high CO concentrations.

CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream. The health threat from lower levels of CO is most serious for those who suffer from heart disease such as angina, clogged arteries, or congestive heart failure. For a person with heart disease, a single exposure to CO at low levels may cause chest pain and reduce that person's ability to exercise; repeated exposures may contribute to other cardiovascular effects. High levels of CO can affect even healthy people. People who breathe high levels of CO can develop vision problems, reduced ability to work or learn, reduced manual dexterity, and difficulty performing complex tasks. At extremely high levels, CO is poisonous and can cause death.

4. Sulfur Dioxide (SO_2)

Sulfur Oxide (SOx) gases (including sulfur dioxide [SO_2]) are formed when fuel containing sulfur, such as coal and oil is burned, and from the refining of gasoline. SOx dissolves easily in water vapor to form acid and interacts with other gases and particles in the air to form sulfates and other products that can be harmful to people and the environment.

5. Lead (Pb)

Lead is a metal found naturally in the environment as well as manufactured products. The major sources of lead emissions have historically been motor vehicles and industrial sources. Due to the phase out of leaded gasoline, metal processing is now the primary source of lead emissions to the air. High levels of lead in the air are typically only found near lead smelters, waste incinerators, utilities, and lead-acid

battery manufacturers. Exposure of fetuses, infants and children to low levels of lead can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased lead levels are associated with increased blood pressure.

6. Particulate Matter (PM)

Particulate matter (PM) is the term for a mixture of solid particles and liquid droplets found in the air. Particulate matter is made up of a number of components including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. The size of particles is directly linked to their potential for causing health problems. Particles that are less than 10 micrometers in diameter (PM10) are the particles that generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. Particles that are less than 2.5 micrometers in diameter (PM2.5) have been designated as a subset of PM10 due to their increased negative health impacts and its ability to remain suspended in the air longer and travel further.

7. Volatile Organic Compounds (VOCs)

Although not a criteria pollutant, reactive organic gases (ROGs), or VOCs, are defined as any compound of carbon—excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate—that participates in atmospheric photochemical reactions. Although there are slight differences in the definition of ROGs and VOCs, the two terms are often used interchangeably. Indoor sources of VOCs include paints, solvents, aerosol sprays, cleansers, tobacco smoke, etc. Outdoor sources of VOCs are from combustion and fuel evaporation. A reduction in VOC emissions reduces certain chemical reactions that contribute to the formulation of ozone. VOCs are transformed into organic aerosols in the atmosphere, which contribute to higher PM10 and lower visibility.

B. Other Pollutants of Concern

1. Toxic Air Contaminants (TACs)

In addition to the above-listed criteria pollutants, toxic air contaminants are another group of pollutants of concern. Sources of toxic air contaminants include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Cars and trucks release at least forty different toxic air contaminants. The most important of these toxic air contaminants, in terms of health risk, are diesel particulates, benzene, formaldehyde, 1,3-butadiene, and acetaldehyde. Public exposure to toxic air contaminants can result from emissions from normal operations as well as from accidental releases. Health effects of toxic air contaminants include cancer, birth defects, neurological damage, and death.

Toxic air contaminants are less pervasive in the urban atmosphere than criteria air pollutants, however they are linked to short-term (acute) or long-term (chronic or carcinogenic) adverse human health effects. There are hundreds of different types of toxic air contaminants with varying degrees of toxicity. Sources of toxic air contaminants include industrial processes, commercial operations (e.g., gasoline stations and dry cleaners), and motor vehicle exhaust.

According to the 2005 California Almanac of Emissions and Air Quality, the majority of the estimated health risk from toxic air contaminants can be attributed to relatively few compounds, the most important of which is diesel particulate matter (DPM). Diesel particulate matter is a subset of PM2.5 because the size of diesel particles are typically 2.5 microns and smaller. The identification of diesel particulate matter as a toxic air contaminant in 1998 led the California Air Resources Board (CARB) to adopt the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-fueled Engines and Vehicles in September 2000. The plan's goals are a 75-percent reduction in diesel particulate matter by 2010 and an 85-percent reduction by 2020 from the 2000 baseline. Diesel engines emit a complex mixture of air pollutants, composed of gaseous and solid material. The visible emissions in diesel exhaust are known as particulate matter or PM, which includes carbon particles or "soot." Diesel exhaust also contains a variety of harmful gases and over 40 other cancer-causing substances. California's identification of diesel particulate matter as a toxic air contaminant was based on its potential to cause cancer, premature deaths, and other health problems. Exposure to diesel particulate matter is a health hazard, particularly to children whose lungs are still developing and the elderly who may have other serious health problems. Overall, diesel engine emissions are responsible for the majority of California's potential airborne cancer risk from combustion sources.

2. Asbestos

Asbestos is listed as a TAC by the ARB and as a Hazardous Air Pollutant by the EPA. Asbestos occurs naturally in mineral formations and crushing or breaking these rocks, through construction or other means, can release asbestiform fibers into the air. Asbestos emissions can result from the sale or use of asbestos-containing materials, road surfacing with such materials, grading activities, and surface mining. The risk of disease is dependent upon the intensity and duration of exposure. When inhaled, asbestos fibers may remain in the lungs and with time may be linked to such diseases as asbestosis, lung cancer, and mesothelioma. Naturally occurring asbestos is not present in Riverside County. The nearest likely locations of naturally occurring asbestos, as identified in the General Location Guide for Ultramafic Rocks in California prepared by the California Division of Mines and Geology, is located in Santa Barbara County. Due to the distance to the nearest natural occurrences of asbestos, the project site is not likely to contain asbestos.

C. Greenhouse Gases (GHGs)

Constituent gases of the Earth's atmosphere, called atmospheric greenhouse gases, play a critical role in the Earth's radiation amount by trapping infrared radiation emitted from the Earth's surface, which otherwise would have escaped to space. Prominent greenhouse

gases contributing to this process include carbon dioxide (CO_2), methane (CH_4), ozone, water vapor, nitrous oxide (N_2O), and chlorofluorocarbons (CFCs). This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate. Anthropogenic (caused or produced by humans) emissions of these greenhouse gases in excess of natural ambient concentrations are responsible for the enhancement of the Greenhouse Effect and have led to a trend of unnatural warming of the Earth's natural climate, known as global warming or climate change. Emissions of gases that induce global warming are attributable to human activities associated with industrial/manufacturing, agriculture, utilities, transportation, and residential land uses. Transportation is responsible for 41 percent of the State's greenhouse gas emissions, followed by electricity generation. Emissions of CO_2 and nitrous oxide (NOx) are byproducts of fossil fuel combustion. Methane, a potent greenhouse gas, results from off-gassing associated with agricultural practices and landfills. Sinks of CO_2, where CO_2 is stored outside of the atmosphere, include uptake by vegetation and dissolution into the ocean. The following provides a description of each of the greenhouse gases and their global warming potential.

1. Water Vapor (H_2O)

   Water vapor is the most abundant, important, and variable GHG in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. The feedback loop in which water is involved is critically important to projecting future climate change. As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to "hold" more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop." The extent to which this positive feedback loop will continue is unknown as there is also dynamics that put the positive feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it will eventually also condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the Earth's surface and heat it up).

2. Carbon Dioxide (CO_2)

   The natural production and absorption of CO_2 is achieved through the terrestrial biosphere and the ocean. However, humankind has altered the natural carbon cycle by burning coal, oil, natural gas, and wood. Since the industrial revolution began in the mid 1700s. Each of these activities has increased in scale and distribution. CO_2 was the first GHG demonstrated to be increasing in atmospheric concentration with the first conclusive measurements being made in the last half of the 20th century. Prior to the industrial revolution, concentrations were fairly stable at 280 parts per million (ppm). The International Panel on Climate Change (IPCC) indicates that concentrations were 379 ppm in 2005, an increase of more than 30 percent. Left

unchecked, the IPCC projects that concentration of carbon dioxide in the atmosphere is projected to increase to a minimum of 540 ppm by 2100 as a direct result of anthropogenic sources. This could result in an average global temperature rise of at least two degrees Celsius or 3.6 degrees Fahrenheit.

3. Methane (CH_4)

CH_4 is an extremely effective absorber of radiation, although its atmospheric concentration is less than that of CO_2. Its lifetime in the atmosphere is brief (10 to 12 years), compared to some other GHGs (such as CO_2, N_2O, and Chlorofluorocarbons (CFCs). CH_4 has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of methane. Other anthropocentric sources include fossil-fuel combustion and biomass burning.

4. Nitrous Oxide (N_2O)

Concentrations of N_2O also began to rise at the beginning of the industrial revolution. In 1998, the global concentration of this GHG was documented at 314 parts per billion (ppb). N_2O is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is also commonly used as an aerosol spray propellant, (i.e., in whipped cream bottles, in potato chip bags to keep chips fresh, and in rocket engines and in race cars).

5. Chlorofluorocarbons (CFCs)

CFCs are gases formed synthetically by replacing all hydrogen atoms in methane or ethane (C_2H_6) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the Earth's surface). CFCs have no natural source, but were first synthesized in 1928. It was used for refrigerants, aerosol propellants, and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and in 1989 the European Community agreed to ban CFCs by 2000 and subsequent treaties banned CFCs worldwide by 2010. This effort was extremely successful, and the levels of the major CFCs are now remaining level or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.

6. Hydrofluorocarbons (HFCs)

HFCs are synthetic man-made chemicals that are used as a substitute for CFCs. Out of all the GHGs, they are one of three groups with the highest global warming potential. The HFCs with the largest measured atmospheric abundances are (in order), HFC-23 (CHF_3), HFC-134a (CF_3CH_2F), and HFC-152a (CH_3CHF_2). Prior to 1990, the only

significant emissions were HFC-23. HFC-134a use is increasing due to its use as a refrigerant. Concentrations of HFC-23 and HFC-134a in the atmosphere are now about 10 parts per trillion (ppt) each. Concentrations of HFC-152a are about 1 ppt. HFCs are manmade for applications such as automobile air conditioners and refrigerants.

7. Perfluorocarbons (PFCs)

PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere. High-energy ultraviolet rays about 60 kilometers above Earth's surface are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6). Concentrations of CF_4 in the atmosphere are over 70 ppt. The two main sources of PFCs are primary aluminum production and semiconductor manufacturing.

8. Sulfur Hexafluoride (SF_6)

SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. SF_6 has the highest global warming potential of any gas evaluated; 23,900 times that of CO_2. Concentrations in the 1990s were about 4 ppt. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

9. Aerosols

Aerosols are particles emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light. Cloud formation can also be affected by aerosols. Sulfate aerosols are emitted when fuel containing sulfur is burned. Black carbon (or soot) is emitted during biomass burning due to the incomplete combustion of fossil fuels. Particulate matter regulation has been lowering aerosol concentrations in the United States; however, global concentrations are likely increasing.

10. Global Warming Potential (GWP)

GHGs have varying global warming potential. The global warming potential is the potential of a gas or aerosol to trap heat in the atmosphere; it is the cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to the reference gas, CO_2. One teragram of carbon dioxide equivalent (Tg CO_2e) is essentially the emissions of the gas multiplied by the global warming potential. One teragram is equal to one million metric tons. The carbon dioxide equivalent is a good way to assess emissions because it gives weight to the global warming potential of the gas. A summary of the atmospheric lifetime and the global warming potential of selected gases are summarized in Table 2. As shown in Table 2, the global warming potential of GHGs ranges from 1 to 22,800.

Table 2

Global Warming Potentials and Atmospheric Lifetimes[1]

Gas	Atmospheric Lifetime (years)	Global Warming Potential[2] (100 Year Horizon)
Carbon Dioxide	50-200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310
HFC-23	264	11,700
HFC-134a	14.6	1,300
HFC-152a	1.5	140
PFC: Tetrafluoromethane	50,000	6,500
PFC: Hexafluoroethane	10,000	9,200
Sulfur Hexafluoride	3,200	23,900

[1] Source: United States Environmental Protection Agency, 2006.

[2] Compared to the same quantity of CO_2 emissions.

IV. Air Quality Management

A. Regulatory Setting

The proposed project is addressed through the efforts of various international, federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for improving the air quality are discussed below.

1. International

In 1988, the United Nations established the Intergovernmental Panel on Climate Change (IPCC) to evaluate the impacts of global climate change and to develop strategies that nations could implement to curtail global climate change. In 1992, the United States joined other countries around the world in signing the United Nations' Framework Convention on Climate Change (UNFCCC) agreement with the goal of controlling GHG emissions. As a result, the Climate Change Action Plan was developed to address the reduction of GHGs in the United States. The plan consists of more than 50 voluntary programs.

Additionally, the Montreal Protocol was originally signed in 1987 and substantially amended in 1990 and 1992. The Montreal Protocol stipulates that the production and consumption of compounds that deplete ozone in the stratosphere—CFCs, halons, carbon tetrachloride, and methyl chloroform—were to be phased out, with the first three by the year 2000 and methyl chloroform by 2005.

2. Federal - United States Environmental Protection Agency

The United States Environmental Protection Agency (EPA) is responsible for setting and enforcing the National Ambient Air Quality Standards (NAAQS) for atmospheric pollutants. It regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives. The National Ambient Air Quality Standards (NAAQS) pollutants were identified using medical evidence and are shown below in Table 3.

As part of its enforcement responsibilities, the EPA requires each state with federal nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the national standards. The State Implementation Plan (SIP) must integrate federal, state, and local components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the timeframe identified in the State Implementation Plan (SIP).

As indicated below in Table 4, the Basin has been designated by the EPA as a non-attainment area for ozone (O_3) and for suspended particulates (PM10 andPM2.5).

Currently, the Basin is in attainment with the ambient air quality standards for carbon monoxide (CO), lead, sulfur dioxide (SO_2), and nitrogen dioxide (NO_2).

Despite substantial improvements in air quality over the past few decades, some air monitoring stations in the Basin still exceed the NAAQS for ozone more frequently than any other stations in the U.S. In 2011, three of the top five stations that exceeded the 8-hour ozone NAAQS were located in the Basin (Central San Bernardino Mountains, East San Bernardino Valley, and Metropolitan Riverside County).

PM2.5 in the Basin has improved significantly in recent years, with 2010 and 2011 being the cleanest years on record. In 2011, only one station in the Basin (Metropolitan Riverside County at Mira Loma) exceeded the annual PM2.5 NAAQS and the 98th percentile form of the 24-hour PM2.5 NAAQS, as well as the 3-year design values for these standards. Basin-wide, the federal PM2.5 24-hour standard level was exceeded in 2011 on 17 sampling days.

The Basin is currently in attainment for the federal standards for carbon monoxide (CO), lead, sulfur dioxide (SO_2), and nitrogen dioxide (NO_2). While the concentration level of the new 1-hour NO_2 federal standard (100 ppb) was exceeded in the Basin at two stations (Central Los Angeles and Long Beach) on the same day in 2011, the NAAQS NO_2 design value has not been exceeded. Therefore, the Basin remains in attainment of the NO_2 NAAQS.

The EPA designated the Los Angeles County portion of the Basin as nonattainment for the recently revised (2008) federal lead standard (0.15 µg/m3, rolling 3-month average), due to the addition of source-specific monitoring under the new federal regulation. This designation was based on two source-specific monitors in Vernon and the City of Industry exceeding the new standard in the 2007-2009 period of data used.

In Massachusetts v. Environmental Protection Agency (Docket No. 05–1120), argued November 29, 2006 and decided April 2, 2007, the U.S. Supreme Court held that not only did the EPA have authority to regulate greenhouse gases, but the EPA's reasons for not regulating this area did not fit the statutory requirements. As such, the U.S. Supreme Court ruled that the EPA should be required to regulate CO_2 and other greenhouse gases as pollutants under the federal Clean Air Act (CAA).

In response to the FY2008 Consolidations Appropriations Act (H.R. 2764; Public Law 110-161), EPA proposed a rule on March 10, 2009 that requires mandatory reporting of GHG emissions from large sources in the United States. On September 22, 2009, the Final Mandatory Reporting of GHG Rule was signed and published in the Federal Register on October 30, 2009. The rule became effective on December 29, 2009. This rule requires suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions to submit annual reports to EPA.

On December 7, 2009, the EPA Administrator signed two distinct findings under section 202(a) of the Clean Air Act. One is an endangerment finding that finds concentrations of the six GHGs in the atmosphere threaten the public health and

welfare of current and future generations. The other is a cause or contribute finding, that finds emissions from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare. These actions will not themselves impose any requirements on industry or other entities. However, it is a prerequisite to finalizing the EPA's proposed GHG emission standards for light-duty vehicles, which were jointly proposed by the EPA and Department of Transportation on September 15, 2009.

On March 19, 2015, the Whitehouse announced that President Obama will issue an Executive Order that will cut the Federal Government's greenhouse gas (GHG) emissions 40 percent over the next decade from 2008 levels -- saving taxpayers up to $18 billion in avoided energy costs -- and increase the share of electricity the Federal Government consumes from renewable sources to 30 percent. Complementing this effort, several major Federal suppliers are announcing commitments to cut their own GHG emissions. Today, the Administration is hosting a roundtable that will bring some of these large Federal suppliers together to discuss the benefits of their GHG reduction targets or to make their first-ever corporate commitments to disclose emissions and set new reduction goals.

Together, the combined results of the Federal Government actions and new supplier commitments will reduce GHG emissions by 26 million metric tons by 2025 from 2008 levels, the equivalent of taking nearly 5.5 million cars off the road for a year. And to encourage continued progress across the Federal supply chain, the Administration is releasing a new scorecard to publicly track self-reported emissions disclosure and progress for all major Federal suppliers, who together represent more than $187 billion in Federal spending and account for more than 40 percent of all Federal contract dollars.

Since the Federal Government is the single largest consumer of energy in the Nation, Federal emissions reductions and progress across the supply chain will have broad impacts. The new commitments announced today support the United States' international commitment to cut net GHG emissions 26-28 percent below 2005 levels by 2025, which President Obama first announced in November 2014 as part of an historic agreement with China. Additionally, the goals build on the strong progress made by Federal agencies during the first six years of the Administration under President Obama's 2009 Executive Order on Federal Leadership on Environmental, Energy and Economic Performance, including reducing Federal GHG emissions by 17 percent — which helped Federal agencies avoid $1.8 billion in cumulative energy costs — and increasing the share of renewable energy consumption to 9 percent.[1]

3. State – California Air Resources Board

The California Air Resources Board (CARB), which is a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within

[1] Source: https://www.whitehouse.gov/the-press-office/2015/03/19/fact-sheet-reducing-greenhouse-gas-emissions-federal-government-and-acro

California. In this capacity, the CARB conducts research, sets the California Ambient Air Quality Standards (CAAQS), compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the State Implementation Plan (SIP). The California Ambient Air Quality Standards (CAAQS) for criteria pollutants are shown in Table 3. In addition, the CARB establishes emission standards for motor vehicles sold in California, consumer products (e.g., hairspray, aerosol paints, and barbeque lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

The South Coast Air Basin has been designated by the CARB as a nonattainment area for ozone, PM10 and PM2.5. Currently, the South Coast Air Basin is in attainment with the ambient air quality standards for CO, lead, SO_2, NO_2, and sulfates and is unclassified for visibility reducing particles and Hydrogen Sulfide.

On June 20, 2002, the CARB revised the PM10 annual average standard to 20 µg/m3 and established an annual average standard for PM2.5 of 12 µg/m3. These standards were approved by the Office of Administrative Law in June 2003 and are now effective. On September 27, 2007 CARB approved the South Coast Air Basin and the Coachella Valley 2007 Air Quality Management Plan for Attaining the Federal 8-hour Ozone and PM2.5 Standards. The plan projects attainment for the 8-hour Ozone standard by 2024 and the PM2.5 standard by 2015.

On December 12, 2008 the CARB adopted Resolution 08-43, which limits NOx, PM10 and PM2.5 emissions from on-road diesel truck fleets that operate in California. On October 12, 2009 Executive Order R-09-010 was adopted that codified Resolution 08-43 into Section 2025, title 13 of the California Code of Regulations. This regulation requires that by the year 2023 all commercial diesel trucks that operate in California shall meet model year 2010 (Tier 4) or latter emission standards. In the interim period, this regulation provides annual interim targets for fleet owners to meet. This regulation also provides a few exemptions including a onetime per year 3-day pass for trucks registered outside of California.

The CARB is also responsible for regulations pertaining to toxic air contaminants. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, 1987, Connelly) was enacted in 1987 as a means to establish a formal air toxics emission inventory risk quantification program. AB 2588, as amended, establishes a process that requires stationary sources to report the type and quantities of certain substances their facilities routinely release into the South Coast Air Basin. The data is ranked by high, intermediate, and low categories, which are determined by: the potency, toxicity, quantity, volume, and proximity of the facility to nearby receptors.

The CARB also proposed interim statewide CEQA thresholds for GHG emissions and released Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act, on October 24, 2008. The State currently has no regulations that establish ambient air quality standards for GHGs. However, the State has passed laws directing CARB to develop actions to reduce GHG emissions, which are listed below.

Assembly Bill 1493

California Assembly Bill 1493 (also known as the Pavley Bill, in reference to its author Fran Pavley) was enacted on July 22, 2002 and required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. In 2004, CARB approved the "Pavley I" regulations limiting the amount of GHGs that may be released from new passenger automobiles that are being phased in between model years 2009 through 2016. This regulation will reduce GHG emissions by 30 percent from 2002 levels by 2016. The second set of regulations "Pavley II" is currently in development and will be phased in between model years 2017 through 2025 and will reduce emissions by 45 percent by the year 2020. The Pavley II standards are being developed by linking the GHG emissions and formerly separate toxic tailpipe emissions standards previously known as the "LEV III" (third stage of the Low Emission Vehicle standards) into a single regulatory framework.

In 2005, the CARB submitted a "waiver" request to the EPA in order to implement the GHG standards and in March of 2008, the U.S. EPA denied the request. However, in June 2009, the decision was reversed and the U.S. EPA granted California the authority to implement the GHG standards for passenger cars, pickup trucks and sport utility vehicles. In September 2009, the Pavley I regulations were adopted by CARB.

Executive Order S-3-05

The California Governor issued Executive Order S-3-05, GHG Emission, in June 2005, which established the following reduction targets:

- 2010: Reduce greenhouse gas emissions to 2000 levels
- 2020: Reduce greenhouse gas emissions to 1990 levels
- 2050: Reduce greenhouse gas emissions to 80 percent below 1990 levels.

The executive order directed the secretary of the California Environmental Protection Agency (CalEPA) to coordinate a multi-agency effort to reduce GHG emissions to the target levels. To comply with the Executive Order, the secretary of CalEPA created the California Climate Action Team (CAT), made up of members from various state agencies and commissions. The team released its first report in March 2006. The report proposed to achieve the targets by building on the voluntary actions of businesses, local governments, and communities and through State incentive and regulatory programs.

Assembly Bill 32

In 2006, the California State Legislature adopted Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006. AB 32 requires CARB, to adopt rules and regulations that would achieve GHG emissions equivalent to statewide levels in 1990 by 2020 through an enforceable statewide emission cap which will be phased in starting in 2012. Emission reductions shall include carbon sequestration projects that would remove carbon from the atmosphere and best management practices that are technologically feasible and cost effective.

On December 6, 2007 CARB released the calculated Year 1990 GHG emissions of 427 million metric tons of CO_2e ($MMTCO_2e$). The 2020 target of 427 $MMTCO_2e$ requires the reduction of 169 $MMTCO_2e$, or approximately 30 percent from the State's projected 2020 business as usual emissions of 596 $MMTCO_2e$ and the reduction of 42 $MMTCO_2e$, or almost 10 percent from the 2002-2004 average GHG emissions. Under AB 32, CARB was required to adopt regulations by January 1, 2011 to achieve reductions in GHGs to meet the 1990 cap by 2020. Early measures CARB took to lower GHG emissions included requiring operators of the largest industrial facilities that emit 25,000 metric tons of CO_2 in a calendar year to submit verification of GHG emissions by December 1, 2010. The CARB Board also approved nine discrete early action measures that include regulations affecting landfills, motor vehicle fuels, refrigerants in cars, port operations and other sources that became enforceable on or before January 1, 2010.

On December 11, 2008 the CARB Board approved a Scoping Plan, with final adoption May 11, 2009 that proposed a variety of measures including direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, a market-based cap-and-trade system, and a fee regulation to fund the program. In current pending litigation, Association of Irritated Residents v. California Air Resources Board, a California State trial court found that the analysis of the alternatives identified in the AB 32 Scoping Plan Functional Equivalent Document (FED) was not sufficient for informed decision-making and public review under CEQA. In response, CARB has appealed the decision. In addition, CARB prepared the *Supplement to the AB 32 Scoping Plan Functional Equivalent Document,* June 13, 2011. On August 24, 2011 CARB recertified the complete AB 32 Scoping Plan Functional Equivalent Environmental Document revised by the Final Supplement. In December, 2011 the Final Supplement was accepted as sufficient to fulfill the trial court's March order.

Senate Bill 1368

Senate Bill 1368 (SB 1368) is the companion Bill of AB 32 and was adopted September, 2006. SB 1368 requires the California Public Utilities Commission (CPUC) to establish a performance standard for baseload generation of GHG emissions by investor-owned utilities by February 1, 2007 and for local publicly owned utilities by June 30, 2007. These standards could not exceed the GHG emissions rate from a baseload combined-cycle, natural gas-fired plant. Furthermore, the legislation states that all electricity provided to the State, including imported electricity, must be generated by plants that meet the standards set by California Public Utilities Commission (CPUC) and California Energy Commission (CEC).

Executive Order S-1-07

Executive Order S-1-07 was issued in 2007 and proclaims that the transportation sector is the main source of GHG emissions in the State, since it generates more than 40 percent of the State's GHG emissions. It establishes a goal to reduce the carbon intensity of transportation fuels sold in the State by at least ten percent

by 2020. This Order also directs CARB to determine whether this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32.

On April 23, 2009 CARB approved the proposed regulation to implement the low carbon fuel standard. The low carbon fuel standard is anticipated to reduce GHG emissions by about 16 MMT per year by 2020. The low carbon fuel standard is designed to provide a framework that uses market mechanisms to spur the steady introduction of lower carbon fuels. The framework establishes performance standards that fuel producers and importers must meet each year beginning in 2011. Separate standards are established for gasoline and diesel fuels and the alternative fuels that can replace each. The standards are "back-loaded", with more reductions required in the last five years, than during the first five years. This schedule allows for the development of advanced fuels that are lower in carbon than today's fuels and the market penetration of plug-in hybrid electric vehicles, battery electric vehicles, fuel cell vehicles, and flexible fuel vehicles. It is anticipated that compliance with the low carbon fuel standard will be based on a combination of both lower carbon fuels and more efficient vehicles.

Reformulated gasoline mixed with corn-derived ethanol at ten percent by volume and low sulfur diesel fuel represent the baseline fuels. Lower carbon fuels may be ethanol, biodiesel, renewable diesel, or blends of these fuels with gasoline or diesel as appropriate. Compressed natural gas and liquefied natural gas also may be low carbon fuels. Hydrogen and electricity, when used in fuel cells or electric vehicles are also considered as low carbon fuels for the low carbon fuel standard.

Senate Bill 97

Senate Bill 97 (SB 97) was adopted August 2007 and acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. SB 97 directed the Governor's Office of Planning and Research (OPR), which is part of the State Natural Resources Agency, to prepare, develop, and transmit to CARB guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, by July 1, 2009. The Natural Resources Agency was required to certify and adopt those guidelines by January 1, 2010.

Pursuant to the requirements of SB 97 as stated above, on December 30, 2009 the Natural Resources Agency adopted amendments to the state CEQA guidelines that address GHG emissions. The CEQA Guidelines Amendments changed 14 sections of the CEQA Guidelines and incorporate GHG language throughout the Guidelines. However, no GHG emissions thresholds of significance were provided and no specific mitigation measures were identified. The GHG emission reduction amendments went into effect on March 18, 2010 and are summarized below:

- Climate action plans and other greenhouse gas reduction plans can be used to determine whether a project has significant impacts, based upon its compliance with the plan.
- Local governments are encouraged to quantify the greenhouse gas emissions of proposed projects, noting that they have the freedom to select the models and methodologies that best meet their needs and circumstances. The section also recommends consideration of several qualitative factors that may be used in the determination of significance, such as the extent to which the given project complies with state, regional, or local GHG reduction plans and policies. OPR does not set or dictate specific thresholds of significance. Consistent with existing CEQA Guidelines, OPR encourages local governments to develop and publish their own thresholds of significance for GHG impacts assessment.
- When creating their own thresholds of significance, local governments may consider the thresholds of significance adopted or recommended by other public agencies, or recommended by experts.
- New amendments include guidelines for determining methods to mitigate the effects of greenhouse gas emissions in Appendix F of the CEQA Guidelines.
- OPR is clear to state that "to qualify as mitigation, specific measures from an existing plan must be identified and incorporated into the project; general compliance with a plan, by itself, is not mitigation."
- OPR's emphasizes the advantages of analyzing GHG impacts on an institutional, programmatic level. OPR therefore approves tiering of environmental analyses and highlights some benefits of such an approach.
- Environmental impact reports (EIRs) must specifically consider a project's energy use and energy efficiency potential.

Senate Bills 1078, 107, and X1-2 and Executive Orders S-14-08 and S-21-09

Senate Bill 1078 (SB 1078) requires 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. Senate Bill 107 (SB 107) changed the target date to 2010. Executive Order S-14-08 was signed on November 2008 and expands the State's Renewable Energy Standard to 33 percent renewable energy by 2020. Executive Order S-21-09 directed CARB to adopt regulations by July 31, 2010 to enforce S-14-08. Senate Bill X1-2 codifies the 33 percent renewable energy requirement by 2020.

Senate Bill 375

Senate Bill 375 (SB 375) was adopted September 2008 and aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPO) to adopt a sustainable communities strategy (SCS) or alternate planning strategy (APS) that will prescribe land use allocation in that MPOs Regional Transportation Plan (RTP). CARB, in consultation with each MPO, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every

four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's sustainable communities strategy or alternate planning strategy for consistency with its assigned targets.

The proposed project is located within the Southern California Association of Governments (SCAG) jurisdiction, which has authority to develop the SCS or APS. For the SCAG region, the targets set by CARB are at eight percent below 2005 per capita GHG emissions levels by 2020 and 13 percent below 2005 per capita GHG emissions levels by 2035. On April 4, 2012, SCAG adopted the 2012-2035 Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS), which meets the CARB emission reduction requirements. The Housing Element Update is required by the State to be completed within 18 months after RTP/SCS adoption or by October 2013.

City and 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, through streamlining and other provisions, qualified projects that are consistent with an approved SCS or APS and categorized as "transit priority projects."

Senate Bill X7-7

Senate Bill X7-7 (SB X7-7), enacted on November 9, 2009, mandates water conservation targets and efficiency improvements for urban and agricultural water suppliers. SB X7-7 requires the Department of Water Resources (DWR) to develop a task force and technical panel to develop alternative best management practices for the water sector. In addition SB X7-7 required the DWR to develop criteria for baseline uses for residential, commercial, and industrial uses for both indoor and landscaped area uses. The DWR was also required to develop targets and regulations that achieve a statewide 20 percent reduction in water usage.

Assembly Bill 939 and Senate Bill 1374

Assembly Bill 939 (AB 939) requires that each jurisdiction in California to divert at least 50 percent of its waste away from landfills, whether through waste reduction, recycling or other means. Senate Bill 1374 (SB 1374) requires the California Integrated Waste Management Board to adopt a model ordinance by March 1, 2004 suitable for adoption by any local agency to require 50 to 75 percent diversion of construction and demolition of waste materials from landfills.

California Code of Regulations (CCR) Title 24, Part 6

CCR Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24) were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Although it was not originally intended to reduce GHG emissions, electricity production by fossil fuels results in

GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

The Energy Commission adopted 2008 Standards on April 23, 2008 and Building Standards Commission approved them for publication on September 11, 2008. These updates became effective on August 1, 2009. 2013 Standards have been approved and are effective July 1, 2014.

California Code of Regulations (CCR) Title 24, Part 11
All buildings for which an application for a building permit is submitted on or after January 1, 2014 must follow the 2013 standards. The 2013 commercial standards are estimated to be 30 percent more efficient than the 2008 standards; residential standards are 25 percent more efficient. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas emissions.

California Green Building Standards
On January 12, 2010, the State Building Standards Commission unanimously adopted updates to the California Green Building Standards Code, which went into effect on January 1, 2011. The Code is a comprehensive and uniform regulatory code for all residential, commercial and school buildings. CCR Title 24, Part 11: California Green Building Standards (Title 24) became effective in 2001 in response to continued efforts to reduce GHG emissions associated with energy consumption. CCR Title 24, Part 11 now require that new buildings reduce water consumption, employ building commissioning to increase building system efficiencies, divert construction waste from landfills, and install low pollutant-emitting finish materials. One focus of CCR Title 24, Part 11 is water conservation measures, which reduce GHG emissions by reducing electrical consumption associated with pumping and treating water. CCR Title 24, Part 11 has approximately 52 nonresidential mandatory measures and an additional 130 provisions for optional use. Some key mandatory measures for commercial occupancies include specified parking for clean air vehicles, a 20 percent reduction of potable water use within buildings, a 50 percent construction waste diversion from landfills, use of building finish materials that emit low levels of volatile organic compounds, and commissioning for new, nonresidential buildings over 10,000 square feet.

The California Green Building Standards Code does not prevent a local jurisdiction from adopting a more stringent code as state law provides methods for local enhancements. The Code recognizes that many jurisdictions have developed existing construction and demolition ordinances, and defers to them as the ruling guidance provided they provide a minimum 50-percent diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. State building code provides the minimum standard that buildings need to meet in order to be certified for occupancy. Enforcement is generally through the local building official.

4. Regional

Regional Air Quality Planning Framework. The 1976 Lewis Air Quality Management Act established the MDAQMD and other air districts throughout the State. The federal CAA Amendments of 1977 required that each state adopt an implementation plan outlining pollution control measures to attain the federal standards in nonattainment areas of the state.

The ARB is responsible for incorporating air quality management plans for local air basins into a State Implementation Plan (SIP) for EPA approval. Significant authority for air quality control within them has been given to local air districts that regulate stationary source emissions and develop local nonattainment plans.

California is divided geographically into air basins for the purpose of managing the air resources of the State on a regional basis. An air basin generally has similar meteorological and geographic conditions throughout. The State is currently divided into 15 air basins. The proposed project site is located within the Mojave Desert Air Basin (MDAB). The MDAQMD includes the desert portion of the San Bernardino County. The MDAQMD is responsible for controlling emissions primarily from stationary sources within the MDAQMD and also maintains air quality monitoring stations to document historical and current levels of air quality within the District. The MDAQMD is also responsible for developing, updating, and implementing the Ozone Attainment Plan (MDAQMD 2004) which establishes a plan to implement, maintain, and enforce a program of emission control measures to attain and maintain the federal ozone air quality standards. Attainment plans prepared by the various air pollution control districts throughout the state are used to develop the SIP for the State of California. The proposed project is located within the MDAQMD and, thus, is subject to the rules and regulations of the MDAQMD.

Regional Air Quality Management Plan. The MDAQMD and SCAG are responsible for formulating and implementing the air quality attainment plan (AQAP) for the Basin. Regional AQAPs were adopted in 1991, 1994, and 1997. The following SIP and AQAP are the currently approved plans for the Basin region:

- 1997 SIP for O_3, PM10, and NO_2
- 1995 Mojave Desert Planning Area Federal PM10 Attainment Plan; no formal action by the EPA

The MDAQMD completed the MDAQMD 2004 Ozone Attainment Plan (State and federal) in April 2004, which has been approved by the EPA.

MDAQMD. The MDAQMD is downwind of the Los Angeles basin and the San Joaquin Valley. Prevailing winds transport ozone and ozone precursors from both regions into and through the MDAB during the summer ozone season. These transport couplings have been officially recognized by the CARB. Local MDAQMD emissions contribute to exceedances of both the NAAQS and CAAQS for ozone, but photochemical ozone modeling conducted by the MDAQMD and CARB indicates that the MDAB would be in attainment of both standards without the influence of this transported air pollution

from upwind regions. Therefore, emissions reductions in the upwind area are critical to the attainment demonstration.

The following includes, but is not limited to, the MDAQMD rules that are applicable to the proposed project:

- Rule 201 (Permit to Construct) - requires written authorization to build, erect, install, alter, or replace any equipment, the use of which may cause the issuance of air contaminants or the use of which may eliminate, reduce, or control the issuance of air contaminants. With respect to the proposed project, this rule would apply to any stationary equipment that is not otherwise exempt from this rule as an insignificant source of air pollutants (see Rule 219).

- Rule 203 (Permit to Operate) - requires written authorization to operate any equipment, the use of which may cause the issuance of air pollutants, or the use of which may reduce or control the issuance of air contaminants. With respect to the proposed project, this rule would apply to any stationary equipment that is not otherwise exempt from this rule as an insignificant source of air pollutants (see Rule 219).

- Rule 219 (Equipment Not Requiring A Written Permit Pursuant to Regulation II) - specifies stationary sources that the MDAQMD considers to be insignificant sources of air pollutants that are exempt from Rules 201 and 202. With respect to the proposed project, the following sources would be exempt from permit requirements:

    - Comfort air conditioning or ventilating systems which are not designed or used to remove air contaminants generated by, or released from, specific equipment units;
    - Space heaters;
    - Equipment used exclusively for steam cleaning;

- Rule 402 (Nuisance) - This rule specifies that a person may not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

- Rule 403.2 (Fugitive Dust Control for the Mojave Desert Planning Area) - This rule requires owners or operators of a construction or demolition fugitive dust source to implement the fugitive dust control measures listed in Rule 403.2. These measures include periodic watering for short-term stabilization of disturbed surface area to minimize visible dust emissions, stabilization of graded surfaces if no development is planned within 30 days, reducing non-essential earth moving activity under high wind conditions, and more. In addition, for sites over 100 acres such as the proposed project, the control measures in Rule 403.2 must also be implemented. The additional control measures include

preparing and submitting a dust control plan to the MDAQMD prior to commencing earth-moving activities. The dust control plan must describe all applicable dust control measures that will be implemented at the project site. Other additional control measures to minimize visible fugitive dust for sites over 100 acres include stabilizing access routes, maintaining natural topography to the extent possible, and constructing paved roads and parking lots first where feasible.

- Rule 1113 (Architectural Coatings) - This rule requires manufacturers, distributors, and end-users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories.

- Rule 1160 (Internal Combustion Engines) - This rule establishes limits for VOC, NOx, and CO emissions associated with stationary internal combustion engines. However, the provisions of the rule do not apply to the following engines:

    - All internal combustion engines rated at less than 500 brake horsepower;
    - All internal combustion engines operated less than 100 hours within any continuous four consecutive calendar quarter period; and
    - Emergency internal combustion engines.

Regulation XIII (New Source Review) - For new and modified stationary sources subject to permitting requirements (see Rule 201), this series of rules prescribes the use of Best Available Control Technology and the provision of emission offsets (i.e., mitigation) for equipment whose emissions exceed specified thresholds. The applicability of these requirements would be determined upon submittal of an application for permit to construct under Rule 201.

To assist in the establishment of a quantitative determination of what is considered "significant," the MDAQMD has published significance thresholds that apply to new projects constructed or operated within the MDAQMD.

Thresholds. The MDAQMD recommends that lead agencies apply these thresholds in determining whether a proposed project would result in a significant air quality impact. If the lead agency finds that a proposed project has the potential to exceed these air pollution thresholds, the project would be considered significant. The MDAQMD has defined thresholds for NOx, VOC, SOx, CO, and PM10, hereinafter referred to as "criteria" pollutants, and for health risk in terms of cancer and non-cancer risk (MDAQMD 2009). Any project is significant if it:

1. Generates total emissions (direct and indirect) in excess of the thresholds given in Table 6; and/or
2. Generates a violation of any ambient air quality standard when added to the local background*; and/or

3. Does not conform with the applicable attainment or maintenance plan(s)*[2]; and/or
4. Exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in one million and/or a Hazard Index (HI) (non-cancerous) greater than or equal to one*.

*These significance thresholds are not applicable to all projects. In general, the emissions comparison (criteria number 1) is sufficient.

Southern California Association of Governments

The SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino and Imperial Counties and addresses regional issues relating to transportation, the economy, community development and the environment. SCAG is the federally designated MPO for the majority of the southern California region and is the largest MPO in the nation. With respect to air quality planning, SCAG has prepared the Regional Transportation Plan and Regional Transportation Improvement Plan (RTIP), which addresses regional development and growth forecasts. These plans form the basis for the land use and transportation components of the AQMP, which are utilized in the preparation of air quality forecasts and in the consistency analysis included in the AQMP. The Regional Transportation Plan, Regional Transportation Improvement Plan, and AQMP are based on projections originating within the City and County General Plans.

5. Local -Town of Yucca Valley

Local jurisdictions, such as the Town of Yucca Valley, have the authority and responsibility to reduce air pollution through its police power and decision-making authority. Specifically, the Town is responsible for the assessment and mitigation of air emissions resulting from its land use decisions. The Town is also responsible for the implementation of transportation control measures as outlined in the 2007 and 2012 AQMP and MDAQMD Attainment Plans. Examples of such measures include bus turnouts, energy-efficient streetlights, and synchronized traffic signals. In accordance with CEQA requirements and the CEQA review process, the Town assesses the air quality impacts of new development projects, requires mitigation of potentially significant air quality impacts by conditioning discretionary permits, and monitors and enforces implementation of such mitigation.

In accordance with the CEQA requirements, the Town does not, however, have the expertise to develop plans, programs, procedures, and methodologies to ensure that air quality within the City and region will meet federal and state standards. Instead, the Town relies on the expertise of the SCAQMD and MDAQMD and utilizes the SCAQMD CEQA Handbook and MDAQMD California Environmental Quality Act (CEQA) And Federal Conformity Guidelines (depending on the location/jurisdiction of the

[2] A project is deemed to not exceed this threshold, and hence not be significant, if it is consistent with the existing land use plan. Zoning changes, specific plans, general plan amendments and similar land use plan changes which do not increase dwelling unit density, do not increase vehicle trips, and do not increase vehicle miles traveled are also deemed to not exceed this threshold.

project) as guidance documents for the environmental review of plans and development proposals within its jurisdiction.

The Town of Yucca Valley General Plan contains the following air quality-related goals and policies that are applicable to the proposed project:

GOAL OSC 10 Preservation and enhancement of the Mojave Desert region's air quality, in order to assure long-term availability of clean and healthful air in the Town of Yucca Valley, for the protection of the health and welfare of the community as a whole.

Policy OSC 10-1 Participate in the monitoring of all air pollutants of regional concern on a continuous basis.

Policy OSC 10-5 Provide consistent and effective code enforcement for construction and grading activities to assure ground disturbances do not contribute to blowing sand and fugitive dust emissions.

GOAL OSC 11 Reduced greenhouse gas emissions from activities within the Town that support efforts under AB32 to mitigate the impact of climate change on the Town and state.

Policy OSC 11-2 Encourage new development to be designed to take advantage of the desert climate through solar orientation, shading patterns, and other green building practices and technologies.

B. Monitored Air Quality

The air quality at any site is dependent on the regional air quality and local pollutant sources. Regional air quality is determined by the release of pollutants throughout the air basin.

The EPA and the ARB designate air basins where ambient air quality standards are exceeded as "nonattainment" areas. If standards are met, the area is designated as an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." National nonattainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards. Each standard has a different definition, or 'form' of what constitutes attainment, based on specific air quality statistics. For example, the Federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring values exceeds the threshold per year. In contrast, the Federal annual PM2.5 standard is met if the three-year average of the annual average PM2.5 concentration is less than or equal to the standard. Attainment status is shown in Table 4.

The MDAQMD maintains an air-monitoring network that measures levels of several air pollutants throughout the air basin. Since not all air monitoring stations measure all of the tracked pollutants, the data from the following three monitoring stations, listed in the order of proximity to the project site have been used. The nearest air monitoring station to the project site is located at off of Campground Road in Yucca Valley (Joshua Tree-National Monument Station). The next nearest monitoring station to the project site is located at 500 North Dearborn Street in Redlands (Redlands Dearborn Station). The Victorville monitoring station located at 14306 Park Avenue in Victorville was used to complete the air monitoring data in the project area. The Joshua Tree- National Monument Station is located approximately 6.06 miles southeast of the project site, the Redlands Dearborn Station is located approximately 38.7 miles west of the project site, and the Victorville Station is located approximately 55.6 miles northwest of the project site. Table 5 presents the monitored pollutant levels from the three Stations. However, it should be noted that due to the air monitoring station distance from the project site, recorded air pollution levels at the air monitoring station reflect with varying degrees of accuracy, local air quality conditions at the project site.

The monitoring data presented in Table 5 shows that ozone and PM10 are the air pollutants of primary concern in the project area, which are detailed below.

Ozone

The monitoring data presented in Table 5 shows that ozone is the air pollutants of primary concern in the project area. It is a secondary pollutant as it is not directly emitted. Ozone is the result of chemical reactions between other pollutants, most importantly hydrocarbons and NO_2, which occur only in the presence of bright sunlight. Pollutants emitted from upwind cities react during transport downwind to produce the oxidant concentrations experienced in the area. Many areas of the SCAQMD and MDAQMD contribute to the ozone levels experienced at the monitoring station, with the more significant areas being those directly upwind.

Carbon Monoxide

CO is another important pollutant that is due mainly to motor vehicles. The Victorville Station did not record an exceedance of the state or federal 1-hour or 8-hour CO standards for the last three years.

Nitrogen Dioxide

The Victorville Station did not record an exceedance of the State or Federal NO_2 standards for the last three years.

Particulate Matter

Particulate levels in the area are due to natural sources, grading operations, and motor vehicles. According to the EPA, some people are much more sensitive than others to breathing fine particles (PM10 and PM2.5). People with influenza, chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death due to breathing these fine particles. People with bronchitis can expect aggravated symptoms from breathing in fine particles. Children may experience decline in lung function due to breathing in PM10 and PM2.5. Other groups considered sensitive are

smokers and people who cannot breathe well through their noses. Exercising athletes are also considered sensitive, because many breathe through their mouths during exercise.

Table 3

State and Federal Criteria Pollutant Standards

Air Pollutant	Concentration / Averaging Time		Most Relevant Effects
	California Standards	Federal Primary Standards	
Ozone (O_3)	0.09 ppm/1-hour 0.07 ppm/8-hour	0.075 ppm/8-hour	(a) Decline in pulmonary function and localized lung edema in humans and animals; (b) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (c) Increased mortality risk; (d) Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (e) Vegetation damage; and (f) Property damage.
Carbon Monoxide (CO)	20.0 ppm/1-hour 9.0 ppm/8-hour	35.0 ppm/1-hour 9.0 ppm/8-hour	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; and (d) Possible increased risk to fetuses.
Nitrogen Dioxide (NO_2)	0.18 ppm/1-hour 0.03 ppm/annual	100 ppb/1-hour 0.053 ppm/annual	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and (c) Contribution to atmospheric discoloration.
Sulfur Dioxide (SO_2)	0.25 ppm/1-hour 0.04 ppm/24-hour	75 ppb/1-hour 0.14 ppm/annual	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma.
Suspended Particulate Matter (PM_{10})	50 µg/m^3/24-hour 20 µg/m^3/annual	150 µg/m^3/24-hour	(a) Exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (b) Declines in pulmonary function growth in children; (c) Increased risk of premature death from heart or lung diseases in elderly.
Suspended Particulate Matter ($PM_{2.5}$)	12 µg/m^3 / annual	35 µg/m^3/24-hour 12 µg/m^3/annual	
Sulfates	25 µg/m^3/24-hour	No Federal Standards	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) property damage.
Lead	1.5 µg/m^3/30-day	0.15 µg/m^3/3-month rolling	(a) Learning disabilities; (b) Impairment of blood formation and nerve conduction.
Visibility Reducing Particles	Extinction coefficient of 0.23 per kilometer-visibility of 10 miles or more due to particles when humidity is less than 70 percent.	No Federal Standards	Visibility impairment on days when relative humidity is less than 70 percent.

[1] Source: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf .

Table 4

Attainment Status of MDAQMD[1]- Portion of Mojave Desert Air Basin[2]

Pollutant	Federal Designation	State Designation
1-Hour Ozone	Revoked June 2005	
8-Hour Ozone	Nonattainment: Moderate	Nonattainment
CO	Unclassified/Attainment	Attainment
PM10	Nonattainment: Moderate	Nonattainment
PM2.5	Unclassified/ Attainment	Nonattainment/Unclassified
Lead	Attainment	Attainment
SO_2	Attainment/ unclassified	Attainment
NO_2	Attainment/ unclassified	Attainment

[1] MDAQMD = Mojave Desert Air Quality Management District

[2] Source: California Air Resources Board (2013) (http://www.arb.ca.gov/desig/desig.htm).

Table 5

Air Quality Monitoring Summary[1]

Pollutant (Standard)[2]	Year		
	2012	2013	2014
Ozone:[3]			
Maximum 1-Hour Concentration (ppm)	0.109	0.103	0.114
Days > CAAQS (0.09 ppm)	**16**	**6**	**8**
Maximum 8-Hour Concentration (ppm)	0.097	0.091	0.096
Days > NAAQS (0.08 ppm)	**48**	**26**	**37**
Days > CAAQS (0.070 ppm)	**72**	**61**	**65**
Carbon Monoxide:[5]			
Maximum 8-Hour Concentration (ppm)	1.83	*	*
Days > CAAQS (9 ppm)	0	0	0
Days > NAAQS (9 ppm)	0	0	0
Nitrogen Dioxide:[5]			
1-Hour 98th Percentile	0.05	0.0557	0.0527
Maximum 1-Hour Concentration (ppm)	0.056	0.0646	0.066
Days > CAAQS (0.18 ppm)	0	0	0
Inhalable Particulates (PM10):[4]			
Maximum 24-Hour Concentration (ug/m^3)	48.0	72.0	62.0
Days > NAAQS (150 ug/m^3)	0	0	0
Days > CAAQS (50 ug/m^3)	0	**2**	**2**
3-Year Max Annual Average (ug/m^3)	**22**	**26**	**26**
Ultra-Fine Particulates (PM2.5):[5]			
Maximum 24-Hour Concentration (ug/m^3)	12.0	13.8	24.1
Days > NAAQS (35 ug/m^3)	0	0	0
Annual Average (ug/m^3)	*	*	*

* means no data available

[1] Source: http://www.arb.ca.gov/adam/topfour/topfour1.php

[2] CAAQS = California Ambient Air Quality Standard; NAAQS = National Ambient Air Quality Standard; ppm = parts per million

[3] Data from Joshua Tree- National Monument Station

[4] Data from Redlands-Dearborn Station

[5] Data from Victorville Station

V. Air Quality Standards

A. Regional Air Quality

According to the MDAQMD, a project is non-conforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan. A project is conforming if it complies with all applicable MDAQMD rules and regulations, complies with all proposed control measures that are not yet adopted from the applicable plan(s), and it is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan).

Violation of Air Quality Standards or Substantial Contribution to Air Quality Violations. The MDAQMD currently recommends that projects with construction-related and/or operational emissions that exceed any of the following emissions thresholds should be considered significant:

- 25 tons per year or 137 pounds per day pounds per day of VOC
- 25 tons per year or 137 pounds per day of NOx
- 100 tons per year or 548 pounds per day of CO
- 25 tons per year or 137 pounds per day of SOx
- 15 tons per year or 82 pounds per day of PM10
- 15 tons per year or 82 pounds per day of PM2.5

For the purposes to this air quality impact analysis, a regional air quality impact would be considered significant if emissions exceed the MDAQMD significance thresholds identified above and in Table 6.

B. Toxic Air Contaminants

According to the MDAQMD CEQA Guidelines, any project that has the potential to expose the public to toxic air contaminants in excess of the following thresholds would be considered to have a significant air quality impact:

- If the Maximum Incremental Cancer Risk is 10 in one million or greater; or
- Toxic air contaminants from the proposed project would result in a Hazard Index increase of 1 or greater.

Residences, schools, daycare centers, playgrounds and medical facilities are considered sensitive receptor land uses. The following project types proposed for sites within the specified distance to an existing or planned (zoned) sensitive receptor land use must be evaluated using significance threshold criteria number 4 (refer to the significance threshold discussion in Section IV, A, 4 above).

Construction

Project construction equipment would emit DPM, which is a carcinogen. However, the DPM emissions are short-term in nature. Determination of risk from DPM is considered

over a 70-year exposure period because carcinogenic risk is directly related to sustained exposure. In contrast, construction activities would be limited to a period of approximately 24 months. Thus, duration of construction activities would represent a fraction of the 70-year exposure period used as the basis for assessing the significance of carcinogenic risk exposure and, therefore, would not represent a source of sustained DPM emissions. Therefore, considering the short time frame, exposure to DPM is anticipated to be less than significant.

Operation

The project is a residential project and will not be a source of toxic air contaminants. Adjacent sensitive receptors would not be exposed to toxic sources of air pollution.

C. Odor Impacts

The MDAQMD Rule Book states that an odor impact would occur if the proposed project creates an odor nuisance pursuant to MDAQMD Rule 402, which states:

> A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.
>
> The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

If the proposed project results in a violation of Rule 402 with regards to odor impacts, then the proposed project would create a significant odor impact.

D. Greenhouse Gases

The Town of Yucca Valley does not have a Climate Action Plan. Greenhouse gas impacts are by their nature cumulative impacts. Localized impacts of climate change are the result of the cumulative impact of global emissions. The combined benefits of reductions achieved by all levels of government help to slow or reverse the growth in greenhouse gas emissions. In the absence of comprehensive international agreements on appropriate levels of reductions achieved by each country, another measure of cumulative contribution is required. California has defined reductions required by the state in AB 32 (1990 emission levels by 2020). This serves to define California's share of the reductions regardless of the activities or lack of activities of other areas of the U.S. or the world.

Another approach to significance is to use a "bright line" threshold that identifies a quantitative increase above which is considered significant. As shown in Table 6, the MDAQMD has identified thresholds of 100,000 tons per year or 548,000 pounds per day of CO2e emissions for individual projects. These thresholds are used in this analysis.

The Town of Yucca Valley General Plan Open Space and Conservation Element addresses greenhouse gases with the following goals and policies that are applicable to the proposed project.

GOAL OSC 11 Reduced greenhouse gas emissions from activities within the Town that support efforts under AB32 to mitigate the impact of climate change on the Town and state.

Policy OSC 11-2 Encourage new development to be designed to take advantage of the desert climate through solar orientation, shading patterns, and other green building practices and technologies.

The project is within the Mojave Desert Air Basin, which is under the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD).

The project will also be subject to the requirements of the California Green Building Code and 2013 Title 24 Building Energy Efficiency Standards which would reduce project-related greenhouse gas emissions.

Table 6

MDAQMD Air Quality Significance Thresholds[1]

Pollutant	Annual Thresholds (tons/year)	Daily Thresholds (lbs/day)
NOx	25	137
VOC	25	137
PM10	15	82
PM2.5	15	82
SOx	25	137
CO	100	548
Lead	0.6	3
Greenhouse Gases (CO2e)	100,000	548,000

VI. Short-Term Construction Impacts

Construction activities associated with the proposed project would have the potential to generate air emissions, toxic air contaminant emissions, and odor impacts. Assumptions for the duration of project construction were obtained from the project applicant. The construction activities for the proposed project are anticipated to include: grading of approximately 12.93 acres, construction of four single-family detached residential dwelling units, and paving of approximately 0.03 acres of roadway dedication.

A. Construction-Related Regional Impacts

The construction-related regional air quality impacts have been analyzed for both criteria pollutants and GHGs.

1. Construction-Related Criteria Pollutants Analysis

The following provides a discussion of the methodology used to calculate regional construction air emissions and an analysis of the proposed project's short-term construction emissions for the criteria pollutants.

Methodology

Typical emission rates from construction activities were obtained from CalEEMod Version 2013.2.2 CalEEMod is a computer model published by the SCAQMD for estimating air pollutant emissions. The CalEEMod program uses the EMFAC2011 computer program to calculate the emission rates specific for the Mojave Desert portion of San Bernardino County for construction-related employee vehicle trips and the OFFROAD2011 computer program to calculate emission rates for heavy truck operations. EMFAC2011 and OFFROAD2011 are computer programs generated by CARB that calculates composite emission rates for vehicles. Emission rates are reported by the program in grams per trip and grams per mile or grams per running hour. Using CalEEMod, the peak daily air pollutant emissions during each phase was calculated and presented below. These emissions represent the highest level of emissions for each of the construction phases in terms of air pollutant emissions. The construction emissions printouts from CalEEMod are provided in Appendix B.

The project is anticipated to start construction of roads and underground utilities in January of 2016 and end in March of 2016. Construction of the four single-family detached residential dwelling units is expected to begin in April of 2016 and take approximately six months per each dwelling unit, with some overlapping, for an estimated completion by December of 2017.

The phases of the construction activities which have been analyzed in the tables below are: 1) grading, 2) building construction, 3) paving, and 4) application of architectural coatings. Building construction, paving and painting phases may overlap during construction. The emissions for the overlapping construction phases were added

together and the total shown in Table 7. See CalEEMod Output (Appendix B) for details.

Per MDAQMD Rule 1113 as amended on April 23, 2012, the architectural coatings that would be applied after January 1, 2013 will be limited to an average of 150 grams per liter or less and the CalEEMod model default VOC emissions have been adjusted accordingly.

Project Impacts
The construction-related criteria pollutant emissions are shown below in Table 7. Table 7 shows that none of the analyzed criteria pollutants would exceed the MDAQMD regional emissions thresholds. Therefore, a less than significant regional air quality impact would occur from construction of the proposed project. Although no impacts would occur during construction, Mitigation Measure 1, will ensure that the contractor abides by all applicable MDAQMD rules and regulations during construction (see Section X).

2. Construction-Related Toxic Air Contaminant Impacts

The greatest potential for toxic air contaminant emissions would be related to diesel particulate emissions associated with heavy equipment operations during construction of the proposed project. According to MDAQMD methodology, health effects from carcinogenic air toxics are usually described in terms of "individual cancer risk". "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of toxic air contaminants over a 70 year lifetime will contract cancer, based on the use of standard risk-assessment methodology. Given the relatively limited number of heavy-duty construction equipment and the short-term construction schedule, the proposed project would not result in a long-term (i.e., 70 years) substantial source of toxic air contaminant emissions and corresponding individual cancer risk. Therefore, no significant short-term toxic air contaminant impacts would occur during construction of the proposed project.

3. Construction-Related Odor Impacts

Potential sources that may emit odors during construction activities include the application of materials such as asphalt pavement. The objectionable odors that may be produced during the construction process are of short-term in nature and the odor emissions are expected cease upon the drying or hardening of the odor producing materials. Due to the short-term nature and limited amounts of odor producing materials being utilized, no significant impact related to odors would occur during construction of the proposed project.

Table 7

Construction-Related Regional Pollutant Emissions[1]

Activity	Pollutant Emissions (pounds/day)					
	VOC	NOx	CO	SO_2	PM10	PM2.5
Grading*						
On-Site[2]	6.48	74.81	49.14	0.06	6.02	4.60
Off-Site[3]	0.30	0.49	4.33	0.00	0.17	0.05
Subtotal	6.78	75.30	53.47	0.06	6.19	4.65
Building Construction						
On-Site[2]	3.41	28.51	18.51	0.03	1.97	1.85
Off-Site[3]	0.03	0.10	0.38	0.00	0.03	0.01
Subtotal	3.43	28.60	18.89	0.03	2.00	1.86
Paving						
On-Site[2]	1.91	20.30	14.73	0.02	1.14	1.05
Off-Site[3]	0.06	0.09	0.99	0.00	0.12	0.03
Subtotal	1.97	20.38	15.72	0.02	1.26	1.08
Architectural Coating						
On-Site[2]	5.86	2.19	1.87	0.00	0.17	0.17
Off-Site[3]	0.00	0.01	0.07	0.00	0.01	0.00
Subtotal	5.87	2.19	1.93	0.00	0.18	0.18
Total of Overlapping Construction Phases[4]	**11.26**	**51.18**	**36.54**	**0.05**	**3.44**	**3.12**
MDAQMD Thresholds	**137**	**137**	**548**	**137**	**82**	**82**
Exceeds Thresholds?	No	No	No	No	No	No

* includes fugitive dust control measures mandated by MDAQMD Rule 403 (used mitigated values for fugitive PM 10 and fugitive PM 2.5)

[1] Source: CalEEMod Version 2013.2.2

[2] On-site emissions from equipment operated on-site that is not operated on public roads.

[3] Off-site emissions from equipment operated on public roads.

[4] Construction phase, paving phase and painting phase may overlap.

VII. Long-Term Air Quality Operational Impacts

The on-going operation of the proposed project would result in a long-term increase in air quality emissions. This increase would be due to emissions from the project-generated vehicle trips and through operational emissions from the on-going use of the proposed project. The following section provides an analysis of potential long-term air quality impacts.

A. Operations-Related Regional Air Quality Impacts

The potential operations-related air emissions have been analyzed below for the criteria pollutants and cumulative impacts.

1. Operations-Related Criteria Pollutant Analysis

The operations-related criteria air quality impacts created by the proposed project have been analyzed through use of the CalEEMod model. The project was analyzed for the opening year of 2018. The operations daily emissions printouts from the CalEEMod model are provided in Appendix B. CalEEMod analyzes operational emissions from area sources, energy usage, and mobile sources, which are discussed below.

Mobile Sources

Mobile sources include emissions from the additional vehicle miles generated from the proposed project. The vehicle trips associated with the proposed project were obtained from the traffic analysis for the project. The traffic analysis showed that the project would generate 38 daily trips. The trip generation for the project was changed to an average of 9.52 per DU per day.

Area Sources

Area sources include emissions from consumer products, landscape equipment and architectural coatings. Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers, as well as air compressors, generators, and pumps. As specifics were not known about the landscaping equipment fleet, CalEEMod defaults were used to estimate emissions from landscaping equipment.

Per MDAQMD Rule 1113 as amended on April 23, 2012, the architectural coatings that would be applied after January 1, 2014 will be limited to an average of 150 grams per liter or less and the CalEEMod model default VOC emissions have been adjusted accordingly. No other changes were made to the default area source parameters.

Energy Usage

Energy usage includes emissions from the generation of electricity and natural gas used on-site. No changes were made to the default energy usage parameters. However, 2013 Title 24 residential standards are at least 25 percent more efficient than 2008 Title 24 Standards (used as baseline in CalEEMod).

Project Impacts

The worst-case summer or winter VOC, NOx, CO, SO_2, PM10, and PM2.5 emissions created from the proposed project's long-term operations have been calculated and are summarized below in Table 8. Table 8 shows that none of the analyzed criteria pollutants would exceed the annual emissions thresholds. Therefore, a less than significant regional air quality impact would occur from operation of the proposed project.

2. Cumulative Regional Air Quality Impacts

Cumulative projects include local development as well as general growth within the project area. However, as with most development, the greatest source of emissions is from mobile sources, which travel well out of the local area. Therefore, from an air quality standpoint, the cumulative analysis would extend beyond any local projects and when wind patterns are considered would cover an even larger area. Accordingly, the cumulative analysis for the project's air quality must be generic in nature.

The project area is out of attainment for both ozone and particulate matter (PM-10 and PM-2.5). Construction and operation of cumulative projects will further degrade the local air quality, as well as the air quality of the Mojave Desert Air Basin. The greatest cumulative impact on the quality of regional air cell will be the incremental addition of pollutants mainly from increased traffic from residential, commercial, and industrial development and the use of heavy equipment and trucks associated with the construction of these projects. Air quality will be temporarily degraded during construction activities that occur separately or simultaneously. However, in accordance with the MDAQMD methodology, projects that do not exceed the MDAQMD criteria or can be mitigated to less than criteria levels are not significant and do not add to the overall cumulative impact. With respect to long-term emissions, this project would create a less than significant cumulative impact.

3. Operations-Related Odor Impacts

The MDAQMD recommends that odor impacts be addressed in a qualitative manner. Such an analysis shall determine whether the project would result in excessive nuisance odors, as defined under the California Code of Regulations and Section 41700 of the California Health and Safety Code, and thus would constitute a public nuisance related to air quality.

Land uses typically considered associated with odors include wastewater treatment facilities, waste-disposal facilities, or agricultural operations. The project does not contain land uses typically associated with emitting objectionable odors. Diesel exhaust and VOCs would be emitted during construction of the project, which are objectionable to some; however, emissions would disperse rapidly from the project site and therefore should not reach an objectionable level at the nearest sensitive receptors.

Table 8

Regional Operational Pollutant Emissions[1]

Activity	Pollutant Emissions (tons/year)					
	VOC	NOx	CO	SO2	PM10	PM2.5
Area Sources[2]	0.66	0.01	0.76	0.00	0.10	0.10
Energy Usage[3]	0.00	0.01	0.01	0.00	0.00	0.00
Mobile Sources[4]	0.70	0.21	0.98	0.00	0.10	0.03
Total Emissions	**1.36**	**0.23**	**1.75**	**0.00**	**0.20**	**0.13**
MDAQMD Thresholds	**25**	**25**	**100**	**25**	**15**	**15**
Exceeds Threshold?	No	No	No	No	No	No

[1] Source: CalEEMod Version 2013.2.2.

[2] Area sources consist of emissions from consumer products, architectural coatings, and landscaping equipment.

[3] Energy usage consists of emissions from generation of electricity and on-site natural gas usage.

[4] Mobile sources consist of emissions from vehicles and road dust.

VIII. Global Climate Change Analysis

The proposed project is anticipated to generate GHG emissions from area sources, energy usage, mobile sources, waste, water, and construction equipment. The following provides the methodology used to calculate the project-related GHG emissions, the project impacts and a consistency analysis of the proposed project with any applicable GHG reduction plans, policies or regulations.

A. Methodology

The CalEEMod Version 2013.2.2 was used to calculate the GHG emissions from the proposed project. Each source of GHG emissions is described in greater detail below. As the Town of Yucca Valley does not have a Climate Action Plan, the emissions were compared to the MDAQMD's GHG threshold of 100,000 tons CO2e annually and 548,000 lbs CO2e per day.

Each source of GHG emissions is described in greater detail below.

1. Area Sources

   Area sources include emissions from consumer products, landscape equipment and architectural coatings. Area sources were analyzed in the manner described in Section VII above.

2. Energy Usage

   Energy usage includes emissions from the generation of electricity and natural gas used on-site. No changes were made to the default energy usage parameters. However, 2013 Title 24 residential standards are at least 25 percent more efficient than 2008 Title 24 Standards (used as baseline in CalEEMod).

3. Mobile Sources

   Mobile sources were analyzed in the manner described in Section VII above. CalEEMod defaults were used in the analysis.

4. Waste

   Waste includes the GHG emissions generated from the processing of waste from the proposed project as well as the GHG emissions from the waste once it is interred into a landfill. The CalEEMod default value for waste generated was used in the analysis.

5. Water

Water includes the water used for the interior of the building as well as for landscaping and is based on the GHG emissions associated with the energy used to transport and filter the water. CalEEMod defaults were used.

B. Project Greenhouse Gas Emissions

The GHG emissions have been calculated based on the parameters described above. A summary of the results are shown below in Table 9 and the CalEEMod Model runs are provided in Appendix C. Table 9 shows that the proposed project would generate a total of 74.73 $MTCO_2e$ per year; 521.49 lbs CO2e per day. According to the thresholds of significance established above in Section V, a cumulative global climate change impact would occur if the GHG emissions created from the ongoing operations would exceed MDAQMD's GHG threshold of 100,000 tons CO2e annually and/or 548,000 lbs CO2e per day. Therefore, as the project's emissions fall well under the annual and daily thresholds, operation of the proposed project would not create a significant cumulative impact to global climate change.

The project is also subject to the requirements of the California Green Building Standards Code. On January 12, 2010, the State Building Standards Commission unanimously adopted updates to the California Green Building Standards Code, which went into effect on January 1, 2011. The Code is a comprehensive and uniform regulatory code for all residential, commercial and school buildings.

The California Green Building Standards Code does not prevent a local jurisdiction from adopting a more stringent code as state law provides methods for local enhancements. The Code recognizes that many jurisdictions have developed existing construction and demolition ordinances, and defers to them as the ruling guidance provided they provide a minimum 50-percent diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. State building code provides the minimum standard that buildings need to meet in order to be certified for occupancy. Enforcement is generally through the local building official.

The California Green Building Standards Code (code section in parentheses) requires:

- Water Efficiency and Conservation [Indoor Water Use (4.303.1)]. Fixtures and fixture fittings reducing the overall use of potable water within the building by at least 20 percent shall be provided. The 20 percent reduction shall be demonstrated by one of the following methods:
    - Prescriptive Method: Showerheads (≤ 2.0 gpm @ 80 psi); Residential Lavatory Faucets (≤ 1.5 gpm @ 60 psi); Nonresidential Lavatory Faucets (≤ .4 gpm @ 60 psi); Kitchen Faucets (≤ 1.8 gpm @ 60 psi); Toilets (≤ 1.28 gal/flush); and urinals (≤ 0.5 gal/flush).
    - Performance Method: Provide a calculation demonstrating a 20% reduction of indoor potable water using the baseline values set forth in Table 4.303.1.

The calculation will be limited to the total water usage of showerheads, lavatory faucets, water closets and urinals within the dwelling.

- Water Efficiency and Conservation [Outdoor Water Use (4.304.1)]. Irrigation Controllers. Automatic irrigation system controllers for landscaping provided by the builder and installed at the time of final inspection shall comply with the following:

    - Controllers shall be weather- or soil moisture-based controllers that automatically adjust irrigation in response to changes in plants' watering needs as weather or soil conditions change.

    - Weather-based controllers without integral rain sensors or communication systems that account for rainfall shall have a separate wired or wireless rain sensor which connects or communicates with the controller(s).

- Construction Waste Reduction of at least 50 percent (4.408.1). Recycle and/or salvage for reuse a minimum of 50 percent of the nonhazardous construction and demolition waste in accordance with either Section 4.408.2, 4.408.3 or 4.408.4; OR meet a more stringent local construction and demolition waste management ordinance. Documentation is required per Section 4.408.5. Exceptions:

    - Excavated soil and land-clearing debris.

    - Alternate waste reduction methods developed by working with local enforcing agencies if diversion or recycle facilities capable of compliance with this item do not exist or are not located reasonably close to the jobsite.

    - The enforcing agency may make exceptions to the requirements of this section when jobsites are located in areas beyond the haul boundaries of the diversion facility.

- Materials pollution control (4.504.1 – 4.504.6). Low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring and particleboard.

- Installer and Special Inspector Qualifications (702.1-702.2). Mandatory special installer inspector qualifications for installation and inspection of energy systems (e.g., heat furnace, air conditioner, mechanical equipment).

Compliance with Green Building Standards and 2013 Title 24 Standards (which are approximately 25% more efficient than 2008 Title 24 Standards for residential buildings) will further reduce project-related greenhouse emissions.

C. <u>Greenhouse Gas Plan Consistency</u>

The proposed project would be required to include all mandatory green building measures for new residential developments under the CalGreen Code, which would require that new buildings reduce water consumption, employ building commissioning to increase building

system efficiencies, divert construction waste from landfills, and install low pollutant emitting finish materials. The implementation of these stricter building and appliance standards would result in water, energy, and construction waste reductions for the proposed project.

As stated above, the GHG emissions generated by the proposed project would not exceed the MDAQMD's GHG threshold of 100,000 tons CO2e annually and 548,000 lbs CO2e per day for all land uses. Consequently, the implementation of the proposed project would not hinder the state's ability to achieve AB 32's goal of achieving 1990 levels of GHG emissions by 2020. In addition, once the energy and water consumption reductions from compliance with the mandatory requirements of CALGreen are accounted for, the GHG emissions associated with the proposed project would be even lower. Furthermore, emissions from vehicles, which are the main source of operational GHG emissions associated with the project, would also be reduced through implementation of the state Pavley standards, the federal CAFE standards, and the state LCFS.

Table 9

Project-Related Greenhouse Gas Emissions[1]

Category	Greenhouse Gas Emissions (Metric Tons/Year)						(Lbs/day)
	Bio-CO2	NonBio-CO_2	CO_2	CH_4	N_2O	CO_2e	CO_2e
Area Sources[2]	9.30	4.01	13.30	0.01	0.00	13.71	367.07
Energy Usage[3]	0.00	36.00	36.00	0.00	0.00	36.17	98.55
Mobile Sources[4]	0.00	109.45	109.45	0.00	0.00	109.54	707.73
Solid Waste[5]	2.16	0.00	2.16	0.13	0.00	4.85	0.00
Water[6]	0.19	3.36	3.55	0.02	0.00	4.10	0.00
Total Emissions	11.65	152.82	164.46	0.17	0.00	**168.38**	**1173.35**
MDAQMD GHG Thresholds						**100,000**	**548,000**
Exceeds Threshold?						**No**	**No**

[1] Source: CalEEMod Version 2013.2.2.

[2] Area sources consist of GHG emissions from consumer products, architectural coatings, and landscape equipment.

[3] Energy usage consist of GHG emissions from electricity and natural gas usage.

[4] Mobile sources consist of GHG emissions from vehicles.

[5] Solid waste includes the CO_2 and CH_4 emissions created from the solid waste placed in landfills.

[6] Water includes GHG emissions from electricity used for transport of water and processing of wastewater.

IX. Air Quality Compliance

The California Environmental Quality Act (CEQA) requires a discussion of any inconsistencies between a proposed project and applicable General Plans and Regional Plans (CEQA Guidelines Section 15125). According to the MDAQMD, a project is non-conforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan.

A project is conforming if it complies with all applicable District rules and regulations, complies with all proposed control measures that are not yet adopted from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan). Conformity with growth forecasts can be established by demonstrating that the project is consistent with the land use plan that was used to generate the growth forecast. An example of a non-conforming project would be one that increases the gross number of dwelling units, increases the number of trips, and/or increases the overall vehicle miles traveled in an affected area (relative to the applicable land use plan).

The project site is located within the Town of Yucca Valley. As shown by the results of this air analysis, the project's emissions do not exceed any MDAQMD thresholds during either short-term construction or long-term operation of the project. The proposed construction of four single-family detached residential dwelling units is consistent with the existing General Plan land use designation (Rural Residential). Therefore, the proposed project is not anticipated to exceed the Attainment Plan assumptions for the project site.

Based on the above, the proposed project would not conflict with implementation of the MDAQMD Attainment Plans, impacts are considered to be less than significant.

X. Mitigation Measures

A. Construction Measures

Mitigation Measure 1. The project applicant shall ensure that all applicable MDAQMD Rules and Regulations (as detailed in Section IV above) are complied with during construction.

B. Operational Measures

No mitigation required.

XI. References

California Air Resources Board

2008 Resolution 08-43

2008 Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act

2011 Supplement to the AB 32 Scoping Plan Functional Equivalent Document

2015 Historical Air Quality, Top 4 Summary

2014 First Update to the Climate Change Scoping Plan, Building on the Framework Pursuant to AB32, the California Global Warming Solutions Act of 2006. May.

Town of Yucca Valley

2014 Town of Yucca Valley General Plan

Governor's Office of Planning and Research

2008 CEQA and Climate: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review

2009 CEQA Guideline Sections to be Added or Amended

Kunzman Associates, Inc.

2015 Hawks Ridge Focused Traffic Analysis. November 5

Mojave Desert Air Quality Management District (MDAQMD)

2009 California Environmental Quality Act (CEQA) And Federal Conformity Guidelines. February

Southern California Association of Governments

2012 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy

Appendices

Appendix A – Glossary of Terms

Appendix B – CalEEMod Model Daily Emissions Printouts

Appendix C – CalEEMod Model Annual Emissions Printouts

APPENDIX A

Glossary of Terms

AQMP	Air Quality Management Plan
BACT	Best Available Control Technologies
CAAQS	California Ambient Air Quality Standards
CalEPA	California Environmental Protection Agency
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCAR	California Climate Action Registry
CEQA	California Environmental Quality Act
CFCs	Chlorofluorocarbons
CH_4	Methane
CNG	Compressed natural gas
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DPM	Diesel particulate matter
EPA	U.S. Environmental Protection Agency
GHG	Greenhouse gas
GWP	Global warming potential
HIDPM	Hazard Index Diesel Particulate Matter
HFCs	Hydrofluorocarbons
IPCC	International Panel on Climate Change
LCFS	Low Carbon Fuel Standard
MDAB	Mojave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District
$MTCO_2e$	Metric tons of carbon dioxide equivalent
$MMTCO_2e$	Million metric tons of carbon dioxide equivalent
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NOx	Nitrogen Oxides
NO_2	Nitrogen dioxide
N_2O	Nitrous oxide
O_3	Ozone
OPR	Governor's Office of Planning and Research
PFCs	Perfluorocarbons
PM	Particle matter
PM10	Particles that are less than 10 micrometers in diameter
PM2.5	Particles that are less than 2.5 micrometers in diameter
PMI	Point of maximum impact
PPM	Parts per million
PPB	Parts per billion
RTIP	Regional Transportation Improvement Plan
RTP	Regional Transportation Plan
SANBAG	San Bernardino Association of Governments
SCAG	Southern California Association of Governments

SF_6	Sulfur hexafluoride
SIP	State Implementation Plan
SOx	Sulfur Oxides
TAC	Toxic air contaminants
VOC	Volatile organic compounds

APPENDIX B

CalEEMod Model Daily Emissions Printouts

Hawks Ridge 6177

San Bernardino-Mojave Desert County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.03	Acre	0.03	1,306.80	0
Single Family Housing	4.00	Dwelling Unit	12.93	7,200.00	11

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2018
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 - 0.03 acres of roadway dedication 4 homes on 12.93 acres.

Construction Phase - No demolition or site preparation needed. Construction schedule from developer.

Trips and VMT - Exported material is being transported to the southern portion of the developer's parcel that is approximately 0.25 miles away.

Grading - 4,000 cy yards export. Site disturbs a total of 12.96 acres.

Architectural Coating - MDAQMD Rule 1113 limits paints to 150 g//L VOC. Residential uses painted only.

Vehicle Trips - Trip generation rate of 9.52 trips/du per TIA.

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Area Coating - MDAQMD Rule 1113 limits paints to 150 g/L VOC. Residential uses only.

Construction Off-road Equipment Mitigation - Fugitive dust mitigation per MDAQMD.

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	653.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	1,960.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	150.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	0
tblAreaCoating	Area_Nonresidential_Interior	1960	0
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	0	250
tblConstructionPhase	NumDays	20.00	55.00
tblConstructionPhase	NumDays	300.00	336.00
tblConstructionPhase	NumDays	30.00	75.00
tblConstructionPhase	NumDays	20.00	55.00
tblConstructionPhase	PhaseStartDate	10/14/2017	10/16/2017
tblConstructionPhase	PhaseStartDate	7/29/2017	7/30/2017
tblGrading	AcresOfGrading	187.50	12.96
tblGrading	MaterialExported	0.00	4,000.00
tblLandUse	LotAcreage	1.30	12.93
tblProjectCharacteristics	OperationalYear	2014	2018
tblVehicleTrips	ST_TR	10.08	9.52
tblVehicleTrips	SU_TR	8.77	9.52
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	6.7220	76.2495	52.5050	0.0685	6.4940	3.6252	10.1192	3.4068	3.3352	6.7419	0.0000	7,059.3217	7,059.3217	1.9480	0.0000	7,100.2305
2017	3.1218	26.4872	18.4056	0.0272	0.1232	1.7832	1.8062	0.0327	1.6748	1.6810	0.0000	2,677.7092	2,677.7092	0.7061	0.0000	2,692.5378
Total	**9.8437**	**102.7367**	**70.9106**	**0.0957**	**6.6172**	**5.4083**	**11.9254**	**3.4395**	**5.0099**	**8.4229**	**0.0000**	**9,737.0309**	**9,737.0309**	**2.6542**	**0.0000**	**9,792.7682**

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	6.7220	76.2495	52.5050	0.0685	2.7042	3.6252	6.3294	1.3748	3.3352	4.7099	0.0000	7,059.3217	7,059.3217	1.9480	0.0000	7,100.2304
2017	3.1218	26.4872	18.4056	0.0272	0.1232	1.7832	1.8062	0.0327	1.6748	1.6810	0.0000	2,677.7092	2,677.7092	0.7061	0.0000	2,692.5378
Total	**9.8437**	**102.7367**	**70.9106**	**0.0957**	**2.8274**	**5.4083**	**8.1355**	**1.4075**	**5.0099**	**6.3909**	**0.0000**	**9,737.0309**	**9,737.0309**	**2.6542**	**0.0000**	**9,792.7682**

	ROG	NOx	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**	**57.27**	**0.00**	**31.78**	**59.08**	**0.00**	**24.12**	**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	6.3756	0.0869	7.8735	2.9600e-003		1.0613	1.0613		1.0613	1.0613	111.0869	47.1825	158.2694	0.1031	8.7400e-003	163.1433
Energy	3.9900e-003	0.0341	0.0145	2.2000e-004		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		43.5351	43.5351	8.3000e-004	8.0000e-004	43.8001
Mobile	0.1794	0.4689	2.3435	3.7700e-003	0.2301	8.2200e-003	0.2383	0.0614	7.5600e-003	0.0690		314.3025	314.3025	0.0116		314.5452
Total	**6.5590**	**0.5899**	**10.2315**	**6.9500e-003**	**0.2301**	**1.0723**	**1.3023**	**0.0614**	**1.0716**	**1.1330**	**111.0869**	**405.0201**	**516.1070**	**0.1155**	**9.5400e-003**	**521.4886**

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	6.3756	0.0869	7.8735	2.9600e-003		1.0613	1.0613		1.0613	1.0613	111.0869	47.1825	158.2694	0.1031	8.7400e-003	163.1433
Energy	3.9900e-003	0.0341	0.0145	2.2000e-004		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		43.5351	43.5351	8.3000e-004	8.0000e-004	43.8001
Mobile	0.1794	0.4689	2.3435	3.7700e-003	0.2301	8.2200e-003	0.2383	0.0614	7.5600e-003	0.0690		314.3025	314.3025	0.0116		314.5452
Total	**6.5590**	**0.5899**	**10.2315**	**6.9500e-003**	**0.2301**	**1.0723**	**1.3023**	**0.0614**	**1.0716**	**1.1330**	**111.0869**	**405.0201**	**516.1070**	**0.1155**	**9.5400e-003**	**521.4886**

	ROG	NOx	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	Grading	Grading	1/1/2016	4/14/2016	5	75	
2	Building Construction	Building Construction	4/15/2016	7/28/2017	5	336	
3	Paving	Paving	7/30/2017	10/13/2017	5	55	
4	Architectural Coating	Architectural Coating	10/16/2017	12/29/2017	5	55	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 12.96

Acres of Paving: 0

Residential Indoor: 14,580; Residential Outdoor: 4,860; 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
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
Grading	8	20.00	0.00	500.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	2.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 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					6.2128	0.0000	6.2128	3.3312	0.0000	3.3312			0.0000			0.0000
Off-Road	6.4795	74.8137	49.1374	0.0617		3.5842	3.5842		3.2975	3.2975		6,414.9807	6,414.9807	1.9350		6,455.6154
Total	**6.4795**	**74.8137**	**49.1374**	**0.0617**	**6.2128**	**3.5842**	**9.7971**	**3.3312**	**3.2975**	**6.6287**		**6,414.9807**	**6,414.9807**	**1.9350**		**6,455.6154**

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	0.1522	1.3074	1.8828	4.7000e-003	0.1169	0.0398	0.1567	0.0321	0.0366	0.0687		473.1386	473.1386	2.4900e-003		473.1910
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	0.0903	0.1284	1.4848	2.0800e-003	0.1643	1.1600e-003	0.1655	0.0436	1.0600e-003	0.0446		171.2024	171.2024	0.0106		171.4240
Total	**0.2425**	**1.4358**	**3.3676**	**6.7800e-003**	**0.2812**	**0.0410**	**0.3221**	**0.0756**	**0.0377**	**0.1133**		**644.3410**	**644.3410**	**0.0130**		**644.6150**

3.2 Grading - 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					2.4230	0.0000	2.4230	1.2992	0.0000	1.2992			0.0000			0.0000
Off-Road	6.4795	74.8137	49.1374	0.0617		3.5842	3.5842		3.2975	3.2975	0.0000	6,414.9807	6,414.9807	1.9350		6,455.6154
Total	**6.4795**	**74.8137**	**49.1374**	**0.0617**	**2.4230**	**3.5842**	**6.0073**	**1.2992**	**3.2975**	**4.5967**	**0.0000**	**6,414.9807**	**6,414.9807**	**1.9350**		**6,455.6154**

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	0.1522	1.3074	1.8828	4.7000e-003	0.1169	0.0398	0.1567	0.0321	0.0366	0.0687		473.1386	473.1386	2.4900e-003		473.1910
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	0.0903	0.1284	1.4848	2.0800e-003	0.1643	1.1600e-003	0.1655	0.0436	1.0600e-003	0.0446		171.2024	171.2024	0.0106		171.4240
Total	**0.2425**	**1.4358**	**3.3676**	**6.7800e-003**	**0.2812**	**0.0410**	**0.3221**	**0.0756**	**0.0377**	**0.1133**		**644.3410**	**644.3410**	**0.0130**		**644.6150**

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	0.0129	0.0790	0.1584	2.2000e-004	6.5700e-003	2.0800e-003	8.6500e-003	1.8700e-003	1.9100e-003	3.7800e-003		21.8171	21.8171	1.3000e-004		21.8198
Worker	9.0300e-003	0.0128	0.1485	2.1000e-004	0.0164	1.2000e-004	0.0166	4.3600e-003	1.1000e-004	4.4600e-003		17.1202	17.1202	1.0600e-003		17.1424
Total	**0.0220**	**0.0918**	**0.3069**	**4.3000e-004**	**0.0230**	**2.2000e-003**	**0.0252**	**6.2300e-003**	**2.0200e-003**	**8.2400e-003**		**38.9374**	**38.9374**	**1.1900e-003**		**38.9622**

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	0.0129	0.0790	0.1584	2.2000e-004	6.5700e-003	2.0800e-003	8.6500e-003	1.8700e-003	1.9100e-003	3.7800e-003		21.8171	21.8171	1.3000e-004		21.8198
Worker	9.0300e-003	0.0128	0.1485	2.1000e-004	0.0164	1.2000e-004	0.0166	4.3600e-003	1.1000e-004	4.4600e-003		17.1202	17.1202	1.0600e-003		17.1424
Total	**0.0220**	**0.0918**	**0.3069**	**4.3000e-004**	**0.0230**	**2.2000e-003**	**0.0252**	**6.2300e-003**	**2.0200e-003**	**8.2400e-003**		**38.9374**	**38.9374**	**1.1900e-003**		**38.9622**

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	0.0116	0.0701	0.1446	2.2000e-004	6.5800e-003	1.8400e-003	8.4100e-003	1.8700e-003	1.6900e-003	3.5600e-003		21.4537	21.4537	1.2000e-004		21.4562
Worker	7.8200e-003	0.0115	0.1319	2.1000e-004	0.0164	1.1000e-004	0.0165	4.3600e-003	1.0000e-004	4.4600e-003		16.4501	16.4501	9.6000e-004		16.4703
Total	**0.0194**	**0.0816**	**0.2764**	**4.3000e-004**	**0.0230**	**1.9500e-003**	**0.0250**	**6.2300e-003**	**1.7900e-003**	**8.0200e-003**		**37.9039**	**37.9039**	**1.0800e-003**		**37.9265**

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	0.0116	0.0701	0.1446	2.2000e-004	6.5800e-003	1.8400e-003	8.4100e-003	1.8700e-003	1.6900e-003	3.5600e-003		21.4537	21.4537	1.2000e-004		21.4562
Worker	7.8200e-003	0.0115	0.1319	2.1000e-004	0.0164	1.1000e-004	0.0165	4.3600e-003	1.0000e-004	4.4600e-003		16.4501	16.4501	9.6000e-004		16.4703
Total	**0.0194**	**0.0816**	**0.2764**	**4.3000e-004**	**0.0230**	**1.9500e-003**	**0.0250**	**6.2300e-003**	**1.7900e-003**	**8.0200e-003**		**37.9039**	**37.9039**	**1.0800e-003**		**37.9265**

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	1.4300e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9088**	**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	0.0586	0.0863	0.9891	1.5600e-003	0.1232	8.3000e-004	0.1241	0.0327	7.6000e-004	0.0334		123.3760	123.3760	7.2100e-003		123.5274
Total	**0.0586**	**0.0863**	**0.9891**	**1.5600e-003**	**0.1232**	**8.3000e-004**	**0.1241**	**0.0327**	**7.6000e-004**	**0.0334**		**123.3760**	**123.3760**	**7.2100e-003**		**123.5274**

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	1.4300e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9088**	**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	0.0586	0.0863	0.9891	1.5600e-003	0.1232	8.3000e-004	0.1241	0.0327	7.6000e-004	0.0334		123.3760	123.3760	7.2100e-003		123.5274
Total	**0.0586**	**0.0863**	**0.9891**	**1.5600e-003**	**0.1232**	**8.3000e-004**	**0.1241**	**0.0327**	**7.6000e-004**	**0.0334**		**123.3760**	**123.3760**	**7.2100e-003**		**123.5274**

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	2.4574					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	**2.7897**	**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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	2.4574					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	**2.7897**	**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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.1794	0.4689	2.3435	3.7700e-003	0.2301	8.2200e-003	0.2383	0.0614	7.5600e-003	0.0690		314.3025	314.3025	0.0116		314.5452
Unmitigated	0.1794	0.4689	2.3435	3.7700e-003	0.2301	8.2200e-003	0.2383	0.0614	7.5600e-003	0.0690		314.3025	314.3025	0.0116		314.5452

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	38.08	38.08	38.08	108,152	108,152
Total	38.08	38.08	38.08	108,152	108,152

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
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Single Family Housing	10.80	7.30	7.50	40.20	19.20	40.60	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.433723	0.068979	0.183157	0.159578	0.045778	0.007720	0.006780	0.077795	0.000831	0.001129	0.010289	0.000587	0.003654

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	3.9900e-003	0.0341	0.0145	2.2000e-004		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		43.5351	43.5351	8.3000e-004	8.0000e-004	43.8001
NaturalGas Unmitigated	3.9900e-003	0.0341	0.0145	2.2000e-004		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		43.5351	43.5351	8.3000e-004	8.0000e-004	43.8001

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	370.048	3.9900e-003	0.0341	0.0145	2.2000e-004		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		43.5351	43.5351	8.3000e-004	8.0000e-004	43.8001
Total		**3.9900e-003**	**0.0341**	**0.0145**	**2.2000e-004**		**2.7600e-003**	**2.7600e-003**		**2.7600e-003**	**2.7600e-003**		**43.5351**	**43.5351**	**8.3000e-004**	**8.0000e-004**	**43.8001**

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	0.370048	3.9900e-003	0.0341	0.0145	2.2000e-004		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		43.5351	43.5351	8.3000e-004	8.0000e-004	43.8001
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**3.9900e-003**	**0.0341**	**0.0145**	**2.2000e-004**		**2.7600e-003**	**2.7600e-003**		**2.7600e-003**	**2.7600e-003**		**43.5351**	**43.5351**	**8.3000e-004**	**8.0000e-004**	**43.8001**

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	6.3756	0.0869	7.8735	2.9600e-003		1.0613	1.0613		1.0613	1.0613	111.0869	47.1825	158.2694	0.1031	8.7400e-003	163.1433
Unmitigated	6.3756	0.0869	7.8735	2.9600e-003		1.0613	1.0613		1.0613	1.0613	111.0869	47.1825	158.2694	0.1031	8.7400e-003	163.1433

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	0.0617					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1821					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	6.1216	0.0831	7.5411	2.9500e-003		1.0595	1.0595		1.0595	1.0595	111.0869	46.5882	157.6752	0.1025	8.7400e-003	162.5367
Landscaping	0.0102	3.8600e-003	0.3323	2.0000e-005		1.8100e-003	1.8100e-003		1.8100e-003	1.8100e-003		0.5942	0.5942	5.9000e-004		0.6066
Total	**6.3756**	**0.0869**	**7.8735**	**2.9700e-003**		**1.0613**	**1.0613**		**1.0613**	**1.0613**	**111.0869**	**47.1825**	**158.2694**	**0.1031**	**8.7400e-003**	**163.1433**

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					
Architectural Coating	0.0617					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1821					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	6.1216	0.0831	7.5411	2.9500e-003		1.0595	1.0595		1.0595	1.0595	111.0869	46.5882	157.6752	0.1025	8.7400e-003	162.5367
Landscaping	0.0102	3.8600e-003	0.3323	2.0000e-005		1.8100e-003	1.8100e-003		1.8100e-003	1.8100e-003		0.5942	0.5942	5.9000e-004		0.6066
Total	**6.3756**	**0.0869**	**7.8735**	**2.9700e-003**		**1.0613**	**1.0613**		**1.0613**	**1.0613**	**111.0869**	**47.1825**	**158.2694**	**0.1031**	**8.7400e-003**	**163.1433**

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

Hawks Ridge 6177

San Bernardino-Mojave Desert County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.03	Acre	0.03	1,306.80	0
Single Family Housing	4.00	Dwelling Unit	12.93	7,200.00	11

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2018
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 - 0.03 acres of roadway dedication 4 homes on 12.93 acres.

Construction Phase - No demolition or site preparation needed. Construction schedule from developer.

Trips and VMT - Exported material is being transported to the southern portion of the developer's parcel that is approximately 0.25 miles away.

Grading - 4,000 cy yards export. Site disturbs a total of 12.96 acres.

Architectural Coating - MDAQMD Rule 1113 limits paints to 150 g//L VOC. Residential uses painted only.

Vehicle Trips - Trip generation rate of 9.52 trips/du per TIA.

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Area Coating - MDAQMD Rule 1113 limits paints to 150 g/L VOC. Residential uses only.

Construction Off-road Equipment Mitigation - Fugitive dust mitigation per MDAQMD.

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	653.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	1,960.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	150.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	0
tblAreaCoating	Area_Nonresidential_Interior	1960	0
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	0	250
tblConstructionPhase	NumDays	20.00	55.00
tblConstructionPhase	NumDays	300.00	336.00
tblConstructionPhase	NumDays	30.00	75.00
tblConstructionPhase	NumDays	20.00	55.00
tblConstructionPhase	PhaseStartDate	10/14/2017	10/16/2017
tblConstructionPhase	PhaseStartDate	7/29/2017	7/30/2017
tblGrading	AcresOfGrading	187.50	12.96
tblGrading	MaterialExported	0.00	4,000.00
tblLandUse	LotAcreage	1.30	12.93
tblProjectCharacteristics	OperationalYear	2014	2018
tblVehicleTrips	ST_TR	10.08	9.52
tblVehicleTrips	SU_TR	8.77	9.52
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	6.7238	76.3116	52.4769	0.0682	6.4940	3.6253	10.1192	3.4068	3.3352	6.7420	0.0000	7,037.3648	7,037.3648	1.9481	0.0000	7,078.2746
2017	3.1219	26.4899	18.4045	0.0272	0.1232	1.7832	1.8062	0.0327	1.6748	1.6810	0.0000	2,675.5291	2,675.5291	0.7061	0.0000	2,690.3577
Total	**9.8457**	**102.8015**	**70.8815**	**0.0954**	**6.6172**	**5.4084**	**11.9254**	**3.4395**	**5.0100**	**8.4230**	**0.0000**	**9,712.8939**	**9,712.8939**	**2.6542**	**0.0000**	**9,768.6323**

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	6.7238	76.3116	52.4769	0.0682	2.7042	3.6253	6.3294	1.3748	3.3352	4.7100	0.0000	7,037.3648	7,037.3648	1.9481	0.0000	7,078.2746
2017	3.1219	26.4899	18.4045	0.0272	0.1232	1.7832	1.8062	0.0327	1.6748	1.6810	0.0000	2,675.5291	2,675.5291	0.7061	0.0000	2,690.3577
Total	**9.8457**	**102.8015**	**70.8815**	**0.0954**	**2.8274**	**5.4084**	**8.1356**	**1.4075**	**5.0100**	**6.3910**	**0.0000**	**9,712.8939**	**9,712.8939**	**2.6542**	**0.0000**	**9,768.6323**

	ROG	NOx	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**	**57.27**	**0.00**	**31.78**	**59.08**	**0.00**	**24.12**	**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	6.3756	0.0869	7.8735	2.9600e-003		1.0613	1.0613		1.0613	1.0613	111.0869	47.1825	158.2694	0.1031	8.7400e-003	163.1433
Energy	3.9900e-003	0.0341	0.0145	2.2000e-004		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		43.5351	43.5351	8.3000e-004	8.0000e-004	43.8001
Mobile	0.1710	0.4887	2.2108	3.4400e-003	0.2301	8.2400e-003	0.2383	0.0614	7.5800e-003	0.0690		289.0507	289.0507	0.0116		289.2939
Total	**6.5506**	**0.6097**	**10.0987**	**6.6200e-003**	**0.2301**	**1.0723**	**1.3024**	**0.0614**	**1.0716**	**1.1330**	**111.0869**	**379.7683**	**490.8552**	**0.1155**	**9.5400e-003**	**496.2373**

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	6.3756	0.0869	7.8735	2.9600e-003		1.0613	1.0613		1.0613	1.0613	111.0869	47.1825	158.2694	0.1031	8.7400e-003	163.1433
Energy	3.9900e-003	0.0341	0.0145	2.2000e-004		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		43.5351	43.5351	8.3000e-004	8.0000e-004	43.8001
Mobile	0.1710	0.4887	2.2108	3.4400e-003	0.2301	8.2400e-003	0.2383	0.0614	7.5800e-003	0.0690		289.0507	289.0507	0.0116		289.2939
Total	**6.5506**	**0.6097**	**10.0987**	**6.6200e-003**	**0.2301**	**1.0723**	**1.3024**	**0.0614**	**1.0716**	**1.1330**	**111.0869**	**379.7683**	**490.8552**	**0.1155**	**9.5400e-003**	**496.2373**

	ROG	NOx	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	Grading	Grading	1/1/2016	4/14/2016	5	75	
2	Building Construction	Building Construction	4/15/2016	7/28/2017	5	336	
3	Paving	Paving	7/30/2017	10/13/2017	5	55	
4	Architectural Coating	Architectural Coating	10/16/2017	12/29/2017	5	55	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 12.96

Acres of Paving: 0

Residential Indoor: 14,580; Residential Outdoor: 4,860; 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
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
Grading	8	20.00	0.00	500.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	2.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 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					6.2128	0.0000	6.2128	3.3312	0.0000	3.3312			0.0000			0.0000
Off-Road	6.4795	74.8137	49.1374	0.0617		3.5842	3.5842		3.2975	3.2975		6,414.9807	6,414.9807	1.9350		6,455.6154
Total	**6.4795**	**74.8137**	**49.1374**	**0.0617**	**6.2128**	**3.5842**	**9.7971**	**3.3312**	**3.2975**	**6.6287**		**6,414.9807**	**6,414.9807**	**1.9350**		**6,455.6154**

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	0.1644	1.3636	2.1302	4.7000e-003	0.1169	0.0399	0.1567	0.0321	0.0367	0.0687		471.9598	471.9598	2.5400e-003		472.0133
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	0.0799	0.1343	1.2094	1.8200e-003	0.1643	1.1600e-003	0.1655	0.0436	1.0600e-003	0.0446		150.4243	150.4243	0.0106		150.6459
Total	**0.2444**	**1.4978**	**3.3395**	**6.5200e-003**	**0.2812**	**0.0410**	**0.3222**	**0.0756**	**0.0377**	**0.1134**		**622.3841**	**622.3841**	**0.0131**		**622.6592**

3.2 Grading - 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					2.4230	0.0000	2.4230	1.2992	0.0000	1.2992			0.0000			0.0000
Off-Road	6.4795	74.8137	49.1374	0.0617		3.5842	3.5842		3.2975	3.2975	0.0000	6,414.9807	6,414.9807	1.9350		6,455.6154
Total	**6.4795**	**74.8137**	**49.1374**	**0.0617**	**2.4230**	**3.5842**	**6.0073**	**1.2992**	**3.2975**	**4.5967**	**0.0000**	**6,414.9807**	**6,414.9807**	**1.9350**		**6,455.6154**

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	0.1644	1.3636	2.1302	4.7000e-003	0.1169	0.0399	0.1567	0.0321	0.0367	0.0687		471.9598	471.9598	2.5400e-003		472.0133
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	0.0799	0.1343	1.2094	1.8200e-003	0.1643	1.1600e-003	0.1655	0.0436	1.0600e-003	0.0446		150.4243	150.4243	0.0106		150.6459
Total	**0.2444**	**1.4978**	**3.3395**	**6.5200e-003**	**0.2812**	**0.0410**	**0.3222**	**0.0756**	**0.0377**	**0.1134**		**622.3841**	**622.3841**	**0.0131**		**622.6592**

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	0.0141	0.0815	0.1821	2.2000e-004	6.5700e-003	2.0900e-003	8.6700e-003	1.8700e-003	1.9300e-003	3.7900e-003		21.6345	21.6345	1.3000e-004		21.6373
Worker	7.9900e-003	0.0134	0.1209	1.8000e-004	0.0164	1.2000e-004	0.0166	4.3600e-003	1.1000e-004	4.4600e-003		15.0424	15.0424	1.0600e-003		15.0646
Total	**0.0221**	**0.0950**	**0.3030**	**4.0000e-004**	**0.0230**	**2.2100e-003**	**0.0252**	**6.2300e-003**	**2.0400e-003**	**8.2500e-003**		**36.6769**	**36.6769**	**1.1900e-003**		**36.7019**

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	0.0141	0.0815	0.1821	2.2000e-004	6.5700e-003	2.0900e-003	8.6700e-003	1.8700e-003	1.9300e-003	3.7900e-003		21.6345	21.6345	1.3000e-004		21.6373
Worker	7.9900e-003	0.0134	0.1209	1.8000e-004	0.0164	1.2000e-004	0.0166	4.3600e-003	1.1000e-004	4.4600e-003		15.0424	15.0424	1.0600e-003		15.0646
Total	**0.0221**	**0.0950**	**0.3030**	**4.0000e-004**	**0.0230**	**2.2100e-003**	**0.0252**	**6.2300e-003**	**2.0400e-003**	**8.2500e-003**		**36.6769**	**36.6769**	**1.1900e-003**		**36.7019**

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	0.0126	0.0723	0.1684	2.2000e-004	6.5800e-003	1.8500e-003	8.4300e-003	1.8700e-003	1.7000e-003	3.5700e-003		21.2736	21.2736	1.2000e-004		21.2762
Worker	6.8800e-003	0.0120	0.1071	1.8000e-004	0.0164	1.1000e-004	0.0165	4.3600e-003	1.0000e-004	4.4600e-003		14.4502	14.4502	9.6000e-004		14.4704
Total	**0.0195**	**0.0843**	**0.2754**	**4.0000e-004**	**0.0230**	**1.9600e-003**	**0.0250**	**6.2300e-003**	**1.8000e-003**	**8.0300e-003**		**35.7238**	**35.7238**	**1.0800e-003**		**35.7466**

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	0.0126	0.0723	0.1684	2.2000e-004	6.5800e-003	1.8500e-003	8.4300e-003	1.8700e-003	1.7000e-003	3.5700e-003		21.2736	21.2736	1.2000e-004		21.2762
Worker	6.8800e-003	0.0120	0.1071	1.8000e-004	0.0164	1.1000e-004	0.0165	4.3600e-003	1.0000e-004	4.4600e-003		14.4502	14.4502	9.6000e-004		14.4704
Total	**0.0195**	**0.0843**	**0.2754**	**4.0000e-004**	**0.0230**	**1.9600e-003**	**0.0250**	**6.2300e-003**	**1.8000e-003**	**8.0300e-003**		**35.7238**	**35.7238**	**1.0800e-003**		**35.7466**

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	1.4300e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9088**	**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	0.0516	0.0901	0.8029	1.3600e-003	0.1232	8.3000e-004	0.1241	0.0327	7.6000e-004	0.0334		108.3764	108.3764	7.2100e-003		108.5278
Total	**0.0516**	**0.0901**	**0.8029**	**1.3600e-003**	**0.1232**	**8.3000e-004**	**0.1241**	**0.0327**	**7.6000e-004**	**0.0334**		**108.3764**	**108.3764**	**7.2100e-003**		**108.5278**

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	1.4300e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9088**	**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	0.0516	0.0901	0.8029	1.3600e-003	0.1232	8.3000e-004	0.1241	0.0327	7.6000e-004	0.0334		108.3764	108.3764	7.2100e-003		108.5278
Total	**0.0516**	**0.0901**	**0.8029**	**1.3600e-003**	**0.1232**	**8.3000e-004**	**0.1241**	**0.0327**	**7.6000e-004**	**0.0334**		**108.3764**	**108.3764**	**7.2100e-003**		**108.5278**

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	2.4574					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	**2.7897**	**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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	2.4574					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	**2.7897**	**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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

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	0.1710	0.4887	2.2108	3.4400e-003	0.2301	8.2400e-003	0.2383	0.0614	7.5800e-003	0.0690		289.0507	289.0507	0.0116		289.2939
Unmitigated	0.1710	0.4887	2.2108	3.4400e-003	0.2301	8.2400e-003	0.2383	0.0614	7.5800e-003	0.0690		289.0507	289.0507	0.0116		289.2939

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	38.08	38.08	38.08	108,152	108,152
Total	38.08	38.08	38.08	108,152	108,152

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
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Single Family Housing	10.80	7.30	7.50	40.20	19.20	40.60	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.433723	0.068979	0.183157	0.159578	0.045778	0.007720	0.006780	0.077795	0.000831	0.001129	0.010289	0.000587	0.003654

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	3.9900e-003	0.0341	0.0145	2.2000e-004		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		43.5351	43.5351	8.3000e-004	8.0000e-004	43.8001
NaturalGas Unmitigated	3.9900e-003	0.0341	0.0145	2.2000e-004		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		43.5351	43.5351	8.3000e-004	8.0000e-004	43.8001

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	370.048	3.9900e-003	0.0341	0.0145	2.2000e-004		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		43.5351	43.5351	8.3000e-004	8.0000e-004	43.8001
Total		**3.9900e-003**	**0.0341**	**0.0145**	**2.2000e-004**		**2.7600e-003**	**2.7600e-003**		**2.7600e-003**	**2.7600e-003**		**43.5351**	**43.5351**	**8.3000e-004**	**8.0000e-004**	**43.8001**

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	0.370048	3.9900e-003	0.0341	0.0145	2.2000e-004		2.7600e-003	2.7600e-003		2.7600e-003	2.7600e-003		43.5351	43.5351	8.3000e-004	8.0000e-004	43.8001
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**3.9900e-003**	**0.0341**	**0.0145**	**2.2000e-004**		**2.7600e-003**	**2.7600e-003**		**2.7600e-003**	**2.7600e-003**		**43.5351**	**43.5351**	**8.3000e-004**	**8.0000e-004**	**43.8001**

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	6.3756	0.0869	7.8735	2.9600e-003		1.0613	1.0613		1.0613	1.0613	111.0869	47.1825	158.2694	0.1031	8.7400e-003	163.1433
Unmitigated	6.3756	0.0869	7.8735	2.9600e-003		1.0613	1.0613		1.0613	1.0613	111.0869	47.1825	158.2694	0.1031	8.7400e-003	163.1433

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	0.0617					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1821					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	6.1216	0.0831	7.5411	2.9500e-003		1.0595	1.0595		1.0595	1.0595	111.0869	46.5882	157.6752	0.1025	8.7400e-003	162.5367
Landscaping	0.0102	3.8600e-003	0.3323	2.0000e-005		1.8100e-003	1.8100e-003		1.8100e-003	1.8100e-003		0.5942	0.5942	5.9000e-004		0.6066
Total	**6.3756**	**0.0869**	**7.8735**	**2.9700e-003**		**1.0613**	**1.0613**		**1.0613**	**1.0613**	**111.0869**	**47.1825**	**158.2694**	**0.1031**	**8.7400e-003**	**163.1433**

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					
Architectural Coating	0.0617					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.1821					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	6.1216	0.0831	7.5411	2.9500e-003		1.0595	1.0595		1.0595	1.0595	111.0869	46.5882	157.6752	0.1025	8.7400e-003	162.5367
Landscaping	0.0102	3.8600e-003	0.3323	2.0000e-005		1.8100e-003	1.8100e-003		1.8100e-003	1.8100e-003		0.5942	0.5942	5.9000e-004		0.6066
Total	**6.3756**	**0.0869**	**7.8735**	**2.9700e-003**		**1.0613**	**1.0613**		**1.0613**	**1.0613**	**111.0869**	**47.1825**	**158.2694**	**0.1031**	**8.7400e-003**	**163.1433**

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

APPENDIX C

CalEEMod Model Annual Emissions Printouts

Hawks Ridge 6177

San Bernardino-Mojave Desert County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.03	Acre	0.03	1,306.80	0
Single Family Housing	4.00	Dwelling Unit	12.93	7,200.00	11

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2018
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 - 0.03 acres of roadway dedication 4 homes on 12.93 acres.

Construction Phase - No demolition or site preparation needed. Construction schedule from developer.

Trips and VMT - Exported material is being transported to the southern portion of the developer's parcel that is approximately 0.25 miles away.

Grading - 4,000 cy yards export. Site disturbs a total of 12.96 acres.

Architectural Coating - MDAQMD Rule 1113 limits paints to 150 g//L VOC. Residential uses painted only.

Vehicle Trips - Trip generation rate of 9.52 trips/du per TIA.

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Area Coating - MDAQMD Rule 1113 limits paints to 150 g/L VOC. Residential uses only.

Construction Off-road Equipment Mitigation - Fugitive dust mitigation per MDAQMD.

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	653.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	1,960.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	150.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	150.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	0
tblAreaCoating	Area_Nonresidential_Interior	1960	0
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	0	250
tblConstructionPhase	NumDays	20.00	55.00
tblConstructionPhase	NumDays	300.00	336.00
tblConstructionPhase	NumDays	30.00	75.00
tblConstructionPhase	NumDays	20.00	55.00
tblConstructionPhase	PhaseStartDate	10/14/2017	10/16/2017
tblConstructionPhase	PhaseStartDate	7/29/2017	7/30/2017
tblGrading	AcresOfGrading	187.50	12.96
tblGrading	MaterialExported	0.00	4,000.00
tblLandUse	LotAcreage	1.30	12.93
tblProjectCharacteristics	OperationalYear	2014	2018
tblVehicleTrips	ST_TR	10.08	9.52
tblVehicleTrips	SU_TR	8.77	9.52
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	0.5712	5.5231	3.7314	5.0900e-003	0.2454	0.3191	0.5646	0.1283	0.2972	0.4254	0.0000	467.9367	467.9367	0.1222	0.0000	470.5035
2017	0.3648	2.6078	1.8625	2.7700e-003	5.0200e-003	0.1698	0.1749	1.3400e-003	0.1592	0.1605	0.0000	248.7949	248.7949	0.0626	0.0000	250.1103
Total	**0.9360**	**8.1309**	**5.5939**	**7.8600e-003**	**0.2505**	**0.4890**	**0.7394**	**0.1296**	**0.4564**	**0.5860**	**0.0000**	**716.7316**	**716.7316**	**0.1849**	**0.0000**	**720.6137**

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	0.5712	5.5231	3.7314	5.0900e-003	0.1033	0.3191	0.4224	0.0521	0.2972	0.3492	0.0000	467.9362	467.9362	0.1222	0.0000	470.5029
2017	0.3648	2.6078	1.8625	2.7700e-003	5.0200e-003	0.1698	0.1749	1.3400e-003	0.1592	0.1605	0.0000	248.7946	248.7946	0.0626	0.0000	250.1100
Total	**0.9360**	**8.1309**	**5.5939**	**7.8600e-003**	**0.1083**	**0.4890**	**0.5973**	**0.0534**	**0.4564**	**0.5098**	**0.0000**	**716.7308**	**716.7308**	**0.1849**	**0.0000**	**720.6129**

	ROG	NOx	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**	**56.74**	**0.00**	**19.22**	**58.79**	**0.00**	**13.00**	**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	0.2964	3.7500e-003	0.3391	1.2000e-004		0.0436	0.0436		0.0436	0.0436	4.1318	1.7814	5.9132	3.8600e-003	3.2000e-004	6.0950
Energy	7.3000e-004	6.2200e-003	2.6500e-003	4.0000e-005		5.0000e-004	5.0000e-004		5.0000e-004	5.0000e-004	0.0000	15.9984	15.9984	5.4000e-004	2.2000e-004	16.0766
Mobile	0.0311	0.0917	0.4366	6.4000e-004	0.0411	1.5000e-003	0.0426	0.0110	1.3800e-003	0.0124	0.0000	48.6456	48.6456	1.9100e-003	0.0000	48.6857
Waste						0.0000	0.0000		0.0000	0.0000	0.9155	0.0000	0.9155	0.0541	0.0000	2.0517
Water						0.0000	0.0000		0.0000	0.0000	0.0827	1.4935	1.5762	8.5600e-003	2.1000e-004	1.8225
Total	**0.3283**	**0.1017**	**0.7783**	**8.0000e-004**	**0.0411**	**0.0456**	**0.0867**	**0.0110**	**0.0455**	**0.0565**	**5.1300**	**67.9188**	**73.0488**	**0.0690**	**7.5000e-004**	**74.7315**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.2964	3.7500e-003	0.3391	1.2000e-004		0.0436	0.0436		0.0436	0.0436	4.1318	1.7814	5.9132	3.8600e-003	3.2000e-004	6.0950
Energy	7.3000e-004	6.2200e-003	2.6500e-003	4.0000e-005		5.0000e-004	5.0000e-004		5.0000e-004	5.0000e-004	0.0000	15.9984	15.9984	5.4000e-004	2.2000e-004	16.0766
Mobile	0.0311	0.0917	0.4366	6.4000e-004	0.0411	1.5000e-003	0.0426	0.0110	1.3800e-003	0.0124	0.0000	48.6456	48.6456	1.9100e-003	0.0000	48.6857
Waste						0.0000	0.0000		0.0000	0.0000	0.9155	0.0000	0.9155	0.0541	0.0000	2.0517
Water						0.0000	0.0000		0.0000	0.0000	0.0827	1.4935	1.5762	8.5600e-003	2.1000e-004	1.8224
Total	**0.3283**	**0.1017**	**0.7783**	**8.0000e-004**	**0.0411**	**0.0456**	**0.0867**	**0.0110**	**0.0455**	**0.0565**	**5.1300**	**67.9188**	**73.0488**	**0.0690**	**7.5000e-004**	**74.7313**

	ROG	NOx	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	Grading	Grading	1/1/2016	4/14/2016	5	75	
2	Building Construction	Building Construction	4/15/2016	7/28/2017	5	336	
3	Paving	Paving	7/30/2017	10/13/2017	5	55	
4	Architectural Coating	Architectural Coating	10/16/2017	12/29/2017	5	55	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 12.96

Acres of Paving: 0

Residential Indoor: 14,580; Residential Outdoor: 4,860; 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
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
Grading	8	20.00	0.00	500.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	2.00	1.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 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					0.2330	0.0000	0.2330	0.1249	0.0000	0.1249	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2430	2.8055	1.8427	2.3100e-003		0.1344	0.1344		0.1237	0.1237	0.0000	218.2340	218.2340	0.0658	0.0000	219.6163
Total	**0.2430**	**2.8055**	**1.8427**	**2.3100e-003**	**0.2330**	**0.1344**	**0.3674**	**0.1249**	**0.1237**	**0.2486**	**0.0000**	**218.2340**	**218.2340**	**0.0658**	**0.0000**	**219.6163**

3.2 Grading - 2016

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	6.4000e-003	0.0520	0.0879	1.8000e-004	4.3100e-003	1.4900e-003	5.8000e-003	1.1800e-003	1.3700e-003	2.5600e-003	0.0000	16.0791	16.0791	9.0000e-005	0.0000	16.0809
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	2.9600e-003	5.3700e-003	0.0490	7.0000e-005	6.0400e-003	4.0000e-005	6.0900e-003	1.6100e-003	4.0000e-005	1.6500e-003	0.0000	5.2778	5.2778	3.6000e-004	0.0000	5.2853
Total	**9.3600e-003**	**0.0574**	**0.1368**	**2.5000e-004**	**0.0104**	**1.5300e-003**	**0.0119**	**2.7900e-003**	**1.4100e-003**	**4.2100e-003**	**0.0000**	**21.3568**	**21.3568**	**4.5000e-004**	**0.0000**	**21.3662**

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					0.0909	0.0000	0.0909	0.0487	0.0000	0.0487	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2430	2.8055	1.8427	2.3100e-003		0.1344	0.1344		0.1237	0.1237	0.0000	218.2337	218.2337	0.0658	0.0000	219.6161
Total	**0.2430**	**2.8055**	**1.8427**	**2.3100e-003**	**0.0909**	**0.1344**	**0.2253**	**0.0487**	**0.1237**	**0.1724**	**0.0000**	**218.2337**	**218.2337**	**0.0658**	**0.0000**	**219.6161**

3.2 Grading - 2016

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	6.4000e-003	0.0520	0.0879	1.8000e-004	4.3100e-003	1.4900e-003	5.8000e-003	1.1800e-003	1.3700e-003	2.5600e-003	0.0000	16.0791	16.0791	9.0000e-005	0.0000	16.0809
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	2.9600e-003	5.3700e-003	0.0490	7.0000e-005	6.0400e-003	4.0000e-005	6.0900e-003	1.6100e-003	4.0000e-005	1.6500e-003	0.0000	5.2778	5.2778	3.6000e-004	0.0000	5.2853
Total	**9.3600e-003**	**0.0574**	**0.1368**	**2.5000e-004**	**0.0104**	**1.5300e-003**	**0.0119**	**2.7900e-003**	**1.4100e-003**	**4.2100e-003**	**0.0000**	**21.3568**	**21.3568**	**4.5000e-004**	**0.0000**	**21.3662**

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	0.3168	2.6511	1.7211	2.4900e-003		0.1830	0.1830		0.1719	0.1719	0.0000	225.2028	225.2028	0.0559	0.0000	226.3758
Total	**0.3168**	**2.6511**	**1.7211**	**2.4900e-003**		**0.1830**	**0.1830**		**0.1719**	**0.1719**	**0.0000**	**225.2028**	**225.2028**	**0.0559**	**0.0000**	**226.3758**

3.3 Building Construction - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3600e-003	7.7500e-003	0.0187	2.0000e-005	6.0000e-004	1.9000e-004	8.0000e-004	1.7000e-004	1.8000e-004	3.5000e-004	0.0000	1.8342	1.8342	1.0000e-005	0.0000	1.8344
Worker	7.3000e-004	1.3300e-003	0.0121	2.0000e-005	1.5000e-003	1.0000e-005	1.5100e-003	4.0000e-004	1.0000e-005	4.1000e-004	0.0000	1.3089	1.3089	9.0000e-005	0.0000	1.3108
Total	**2.0900e-003**	**9.0800e-003**	**0.0308**	**4.0000e-005**	**2.1000e-003**	**2.0000e-004**	**2.3100e-003**	**5.7000e-004**	**1.9000e-004**	**7.6000e-004**	**0.0000**	**3.1431**	**3.1431**	**1.0000e-004**	**0.0000**	**3.1452**

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	0.3168	2.6511	1.7211	2.4900e-003		0.1830	0.1830		0.1719	0.1719	0.0000	225.2026	225.2026	0.0559	0.0000	226.3755
Total	**0.3168**	**2.6511**	**1.7211**	**2.4900e-003**		**0.1830**	**0.1830**		**0.1719**	**0.1719**	**0.0000**	**225.2026**	**225.2026**	**0.0559**	**0.0000**	**226.3755**

3.3 Building Construction - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3600e-003	7.7500e-003	0.0187	2.0000e-005	6.0000e-004	1.9000e-004	8.0000e-004	1.7000e-004	1.8000e-004	3.5000e-004	0.0000	1.8342	1.8342	1.0000e-005	0.0000	1.8344
Worker	7.3000e-004	1.3300e-003	0.0121	2.0000e-005	1.5000e-003	1.0000e-005	1.5100e-003	4.0000e-004	1.0000e-005	4.1000e-004	0.0000	1.3089	1.3089	9.0000e-005	0.0000	1.3108
Total	**2.0900e-003**	**9.0800e-003**	**0.0308**	**4.0000e-005**	**2.1000e-003**	**2.0000e-004**	**2.3100e-003**	**5.7000e-004**	**1.9000e-004**	**7.6000e-004**	**0.0000**	**3.1431**	**3.1431**	**1.0000e-004**	**0.0000**	**3.1452**

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	0.2327	1.9804	1.3597	2.0100e-003		0.1336	0.1336		0.1255	0.1255	0.0000	179.6093	179.6093	0.0442	0.0000	180.5376
Total	**0.2327**	**1.9804**	**1.3597**	**2.0100e-003**		**0.1336**	**0.1336**		**0.1255**	**0.1255**	**0.0000**	**179.6093**	**179.6093**	**0.0442**	**0.0000**	**180.5376**

3.3 Building Construction - 2017

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	9.8000e-004	5.5400e-003	0.0139	2.0000e-005	4.9000e-004	1.4000e-004	6.2000e-004	1.4000e-004	1.3000e-004	2.7000e-004	0.0000	1.4545	1.4545	1.0000e-005	0.0000	1.4547
Worker	5.1000e-004	9.6000e-004	8.6600e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0141	1.0141	7.0000e-005	0.0000	1.0154
Total	**1.4900e-003**	**6.5000e-003**	**0.0226**	**3.0000e-005**	**1.7000e-003**	**1.5000e-004**	**1.8400e-003**	**4.6000e-004**	**1.4000e-004**	**6.0000e-004**	**0.0000**	**2.4686**	**2.4686**	**8.0000e-005**	**0.0000**	**2.4701**

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	0.2327	1.9804	1.3597	2.0100e-003		0.1336	0.1336		0.1255	0.1255	0.0000	179.6091	179.6091	0.0442	0.0000	180.5374
Total	**0.2327**	**1.9804**	**1.3597**	**2.0100e-003**		**0.1336**	**0.1336**		**0.1255**	**0.1255**	**0.0000**	**179.6091**	**179.6091**	**0.0442**	**0.0000**	**180.5374**

3.3 Building Construction - 2017

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	9.8000e-004	5.5400e-003	0.0139	2.0000e-005	4.9000e-004	1.4000e-004	6.2000e-004	1.4000e-004	1.3000e-004	2.7000e-004	0.0000	1.4545	1.4545	1.0000e-005	0.0000	1.4547
Worker	5.1000e-004	9.6000e-004	8.6600e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0141	1.0141	7.0000e-005	0.0000	1.0154
Total	**1.4900e-003**	**6.5000e-003**	**0.0226**	**3.0000e-005**	**1.7000e-003**	**1.5000e-004**	**1.8400e-003**	**4.6000e-004**	**1.4000e-004**	**6.0000e-004**	**0.0000**	**2.4686**	**2.4686**	**8.0000e-005**	**0.0000**	**2.4701**

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	0.0525	0.5582	0.4050	6.1000e-004		0.0313	0.0313		0.0288	0.0288	0.0000	56.9069	56.9069	0.0174	0.0000	57.2731
Paving	4.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0525**	**0.5582**	**0.4050**	**6.1000e-004**		**0.0313**	**0.0313**		**0.0288**	**0.0288**	**0.0000**	**56.9069**	**56.9069**	**0.0174**	**0.0000**	**57.2731**

3.4 Paving - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-003	2.6400e-003	0.0238	4.0000e-005	3.3200e-003	2.0000e-005	3.3500e-003	8.8000e-004	2.0000e-005	9.0000e-004	0.0000	2.7887	2.7887	1.8000e-004	0.0000	2.7924
Total	**1.4000e-003**	**2.6400e-003**	**0.0238**	**4.0000e-005**	**3.3200e-003**	**2.0000e-005**	**3.3500e-003**	**8.8000e-004**	**2.0000e-005**	**9.0000e-004**	**0.0000**	**2.7887**	**2.7887**	**1.8000e-004**	**0.0000**	**2.7924**

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	0.0525	0.5582	0.4050	6.1000e-004		0.0313	0.0313		0.0288	0.0288	0.0000	56.9068	56.9068	0.0174	0.0000	57.2730
Paving	4.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0525**	**0.5582**	**0.4050**	**6.1000e-004**		**0.0313**	**0.0313**		**0.0288**	**0.0288**	**0.0000**	**56.9068**	**56.9068**	**0.0174**	**0.0000**	**57.2730**

3.4 Paving - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-003	2.6400e-003	0.0238	4.0000e-005	3.3200e-003	2.0000e-005	3.3500e-003	8.8000e-004	2.0000e-005	9.0000e-004	0.0000	2.7887	2.7887	1.8000e-004	0.0000	2.7924
Total	**1.4000e-003**	**2.6400e-003**	**0.0238**	**4.0000e-005**	**3.3200e-003**	**2.0000e-005**	**3.3500e-003**	**8.8000e-004**	**2.0000e-005**	**9.0000e-004**	**0.0000**	**2.7887**	**2.7887**	**1.8000e-004**	**0.0000**	**2.7924**

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	0.0676					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.1400e-003	0.0601	0.0514	8.0000e-005		4.7700e-003	4.7700e-003		4.7700e-003	4.7700e-003	0.0000	7.0215	7.0215	7.4000e-004	0.0000	7.0370
Total	**0.0767**	**0.0601**	**0.0514**	**8.0000e-005**		**4.7700e-003**	**4.7700e-003**		**4.7700e-003**	**4.7700e-003**	**0.0000**	**7.0215**	**7.0215**	**7.4000e-004**	**0.0000**	**7.0370**

3.5 Architectural Coating - 2017

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0676					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.1400e-003	0.0601	0.0514	8.0000e-005		4.7700e-003	4.7700e-003		4.7700e-003	4.7700e-003	0.0000	7.0214	7.0214	7.4000e-004	0.0000	7.0370
Total	**0.0767**	**0.0601**	**0.0514**	**8.0000e-005**		**4.7700e-003**	**4.7700e-003**		**4.7700e-003**	**4.7700e-003**	**0.0000**	**7.0214**	**7.0214**	**7.4000e-004**	**0.0000**	**7.0370**

3.5 Architectural Coating - 2017

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0311	0.0917	0.4366	6.4000e-004	0.0411	1.5000e-003	0.0426	0.0110	1.3800e-003	0.0124	0.0000	48.6456	48.6456	1.9100e-003	0.0000	48.6857
Unmitigated	0.0311	0.0917	0.4366	6.4000e-004	0.0411	1.5000e-003	0.0426	0.0110	1.3800e-003	0.0124	0.0000	48.6456	48.6456	1.9100e-003	0.0000	48.6857

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	38.08	38.08	38.08	108,152	108,152
Total	38.08	38.08	38.08	108,152	108,152

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
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Single Family Housing	10.80	7.30	7.50	40.20	19.20	40.60	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.433723	0.068979	0.183157	0.159578	0.045778	0.007720	0.006780	0.077795	0.000831	0.001129	0.010289	0.000587	0.003654

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	8.7906	8.7906	4.0000e-004	8.0000e-005	8.8250
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	8.7906	8.7906	4.0000e-004	8.0000e-005	8.8250
NaturalGas Mitigated	7.3000e-004	6.2200e-003	2.6500e-003	4.0000e-005		5.0000e-004	5.0000e-004		5.0000e-004	5.0000e-004	0.0000	7.2077	7.2077	1.4000e-004	1.3000e-004	7.2516
NaturalGas Unmitigated	7.3000e-004	6.2200e-003	2.6500e-003	4.0000e-005		5.0000e-004	5.0000e-004		5.0000e-004	5.0000e-004	0.0000	7.2077	7.2077	1.4000e-004	1.3000e-004	7.2516

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	135068	7.3000e-004	6.2200e-003	2.6500e-003	4.0000e-005		5.0000e-004	5.0000e-004		5.0000e-004	5.0000e-004	0.0000	7.2077	7.2077	1.4000e-004	1.3000e-004	7.2516
Total		**7.3000e-004**	**6.2200e-003**	**2.6500e-003**	**4.0000e-005**		**5.0000e-004**	**5.0000e-004**		**5.0000e-004**	**5.0000e-004**	**0.0000**	**7.2077**	**7.2077**	**1.4000e-004**	**1.3000e-004**	**7.2516**

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	135068	7.3000e-004	6.2200e-003	2.6500e-003	4.0000e-005		5.0000e-004	5.0000e-004		5.0000e-004	5.0000e-004	0.0000	7.2077	7.2077	1.4000e-004	1.3000e-004	7.2516
Total		**7.3000e-004**	**6.2200e-003**	**2.6500e-003**	**4.0000e-005**		**5.0000e-004**	**5.0000e-004**		**5.0000e-004**	**5.0000e-004**	**0.0000**	**7.2077**	**7.2077**	**1.4000e-004**	**1.3000e-004**	**7.2516**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	30718.6	8.7906	4.0000e-004	8.0000e-005	8.8250
Total		**8.7906**	**4.0000e-004**	**8.0000e-005**	**8.8250**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	30718.6	8.7906	4.0000e-004	8.0000e-005	8.8250
Total		**8.7906**	**4.0000e-004**	**8.0000e-005**	**8.8250**

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	0.2964	3.7500e-003	0.3391	1.2000e-004		0.0436	0.0436		0.0436	0.0436	4.1318	1.7814	5.9132	3.8600e-003	3.2000e-004	6.0950
Unmitigated	0.2964	3.7500e-003	0.3391	1.2000e-004		0.0436	0.0436		0.0436	0.0436	4.1318	1.7814	5.9132	3.8600e-003	3.2000e-004	6.0950

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	0.0113					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0332					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.2510	3.4100e-003	0.3092	1.2000e-004		0.0434	0.0434		0.0434	0.0434	4.1318	1.7328	5.8647	3.8100e-003	3.2000e-004	6.0455
Landscaping	9.2000e-004	3.5000e-004	0.0299	0.0000		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	0.0485	0.0485	5.0000e-005	0.0000	0.0495
Total	**0.2964**	**3.7600e-003**	**0.3391**	**1.2000e-004**		**0.0436**	**0.0436**		**0.0436**	**0.0436**	**4.1318**	**1.7814**	**5.9132**	**3.8600e-003**	**3.2000e-004**	**6.0950**

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	0.0113					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0332					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.2510	3.4100e-003	0.3092	1.2000e-004		0.0434	0.0434		0.0434	0.0434	4.1318	1.7328	5.8647	3.8100e-003	3.2000e-004	6.0455
Landscaping	9.2000e-004	3.5000e-004	0.0299	0.0000		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	0.0485	0.0485	5.0000e-005	0.0000	0.0495
Total	**0.2964**	**3.7600e-003**	**0.3391**	**1.2000e-004**		**0.0436**	**0.0436**		**0.0436**	**0.0436**	**4.1318**	**1.7814**	**5.9132**	**3.8600e-003**	**3.2000e-004**	**6.0950**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	1.5762	8.5600e-003	2.1000e-004	1.8224
Unmitigated	1.5762	8.5600e-003	2.1000e-004	1.8225

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0.260616 / 0.164301	1.5762	8.5600e-003	2.1000e-004	1.8225
Total		**1.5762**	**8.5600e-003**	**2.1000e-004**	**1.8225**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0.260616 / 0.164301	1.5762	8.5600e-003	2.1000e-004	1.8224
Total		**1.5762**	**8.5600e-003**	**2.1000e-004**	**1.8224**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.9155	0.0541	0.0000	2.0517
Unmitigated	0.9155	0.0541	0.0000	2.0517

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.51	0.9155	0.0541	0.0000	2.0517
Total		**0.9155**	**0.0541**	**0.0000**	**2.0517**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.51	0.9155	0.0541	0.0000	2.0517
Total		**0.9155**	**0.0541**	**0.0000**	**2.0517**

9.0 Operational Offroad

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

10.0 Vegetation

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