Appendix A:
SD Homes Redlands Apartments Air Quality and Global Climate Change Impact Analysis

THIS PAGE INTENTIONALLY LEFT BLANK

SD HOMES REDLANDS APARTMENTS AIR QUALITY AND GLOBAL CLIMATE CHANGE IMPACT ANALYSIS

City of Redlands

September 25, 2018

GANDDINI GROUP, INC.
550 Parkcenter Drive, Suite 202, Santa Ana, California 92705
714.795.3100 | www.ganddini.com
Contact: Katie Wilson, M.S.

18-0085

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

The purpose of this air quality and global climate change impact analysis is to provide an assessment of the impacts resulting from development of the proposed SD Homes Redlands Apartments project and to identify measures that may be necessary to reduce potentially significant impacts.

CONSTRUCTION-SOURCE EMISSIONS

With incorporation of mitigation measure 1, project construction-source emissions would not exceed applicable regional thresholds of significance established by the SCAQMD. For localized emissions, the project will not exceed applicable Localized Significance Thresholds (LSTs) established by the SCAQMD.

With incorporation of mitigation measure 1, project construction-source emissions would not conflict with the Basin Air Quality Management Plan (AQMP). As discussed herein, the project will comply with all applicable SCAQMD 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).

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

With incorporation of mitigation measures 2 through 4, project operational-sourced emissions would not exceed applicable regional thresholds of significance established by the SCAQMD. Project operational-source emissions would not result in or cause a significant localized air quality impact as discussed in the Operations-Related Local Air Quality Impacts section of this report. Additionally, project-related trips will not cause or result in CO concentrations exceeding applicable state and/or federal standards (CO "hotspots). The project is a residential use, and will not be a significant source of TACs. Therefore, project operational-source emissions would therefore not adversely affect sensitive receptors within the vicinity of the project.

With incorporation of mitigation measures 2 through 4, project operational-source emissions would not conflict with the Basin Air Quality Management Plan (AQMP). With incorporation of mitigation, the project's emissions meet SCAQMD regional 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.

GREENHOUSE GASES

With incorporation of mitigation measures 2 through 4, project-related GHG emissions are also considered to be less than significant and will not conflict with the goals of AB-32, SB-32, or the City of Redlands Climate Action Plan.

1. INTRODUCTION

This section describes the purpose of this air quality and global climate change impact analysis, project location, proposed development, and study area.

PURPOSE AND OBJECTIVES

This study was performed to address the possibility of regional and local air quality impacts, global climate change impacts, and cancer risk from diesel 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 SCAQMD AQMP
- recommendations for mitigation measures

The City of Redlands is the lead agency for 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.

PROJECT LOCATION

The proposed project is located adjacent to Orange Avenue between Iowa Street and Alabama Street in the City of Redlands. A vicinity map showing the project location is provided on Figure 1.

PROJECT DESCRIPTION

The project proposes to develop the 21.84 gross acre (18.94 net acre) project site with 412 multi-family (low-rise) attached residential dwelling units. The project includes a General Plan Amendment (GPA) to change the existing residential land use from medium density to high density residential. Figure 2 illustrates the project site plan.

PHASING AND TIMING

The project is anticipated to be constructed in one phase with construction expected to begin in April 2019 and being completed in approximately one year. The project will be operational in 2020.

SENSITIVE RECEPTORS IN PROJECT VICINITY

For the purposes of a CEQA analysis, the SCAQMD considers a sensitive receptor to be a receptor such as a residence, hospital, or convalescent facility where it is possible that an individual could remain at the location for 24 hours. SCAQMD also considers land uses such as schools, child care centers, athletic facilities, and playgrounds to be sensitive receptors. 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.

The nearest sensitive receptors to the project site are the single-family detached residential dwelling units located adjacent to the north, south, east, and west of the project site. In addition, single-family detached

residential dwelling units are located approximately 65 feet east (across Alabama Street) and 50 feet west (across Iowa Street), while multi-family attached residential dwelling units are located approximately 100 feet east (across Alabama Street).

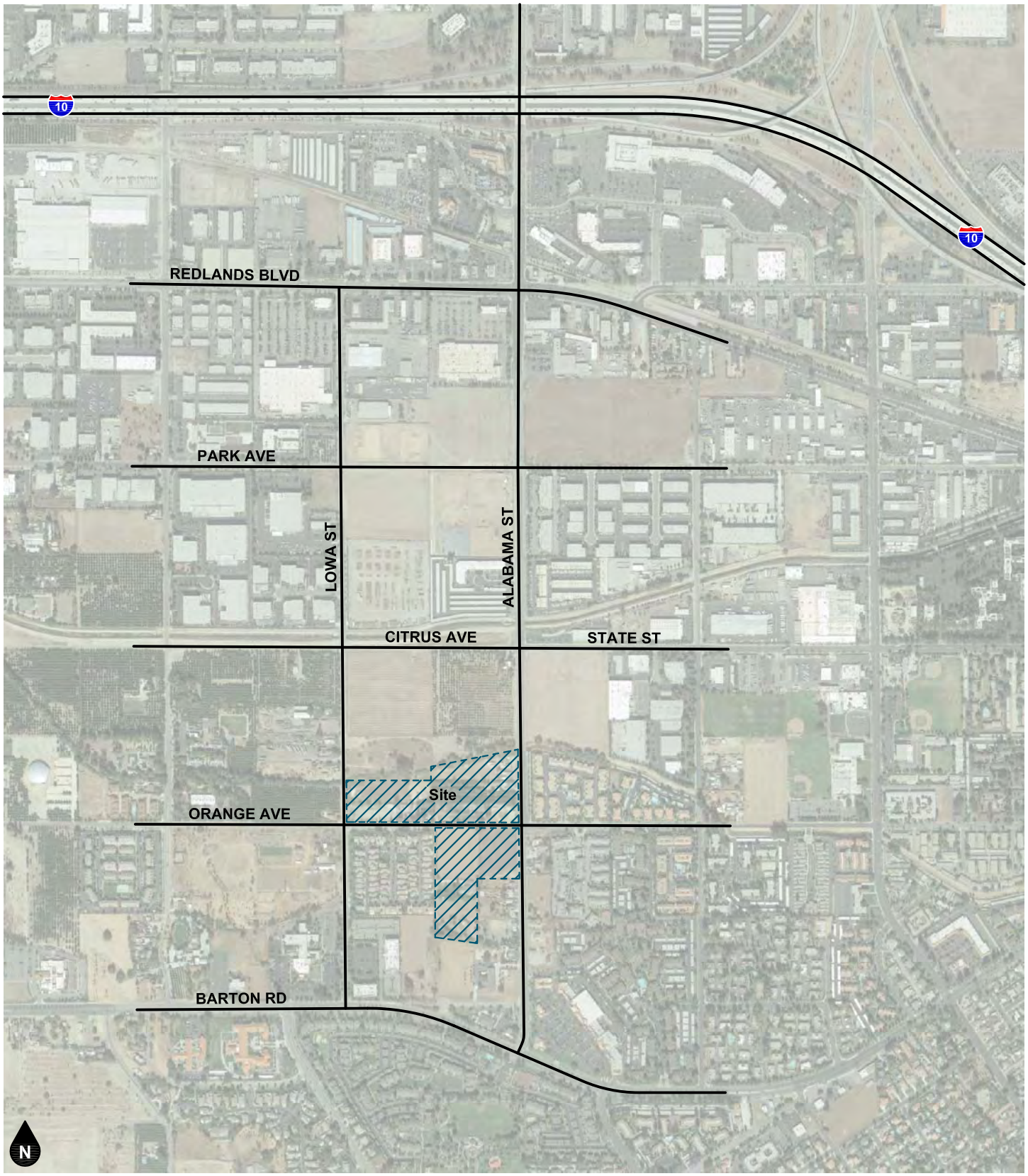

Figure 1
Project Location Map

Figure 2
Site Plan

2. ATMOSPHERIC SETTING

The project site is located within the southwestern portion of San Bernardino County, which is part of the South Coast Air Basin (SCAB) that includes all of Orange County as well as the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The South Coast Air Basin is located on a coastal plain with connecting broad valleys and low hills to the east. Regionally, the South Coast Air Basin is bounded by the Pacific Ocean to the southwest and high mountains to the east forming the inland perimeter. The project site is located toward the northeast portion of the South Coast Air Basin near the foot of the San Bernardino Mountains, which define the eastern boundary of the South Coast Air Basin.

The climate of western San Bernardino County, technically called an interior valley subclimate of the Southern California's Mediterranean-type climate, is characterized by hot dry summers, mild moist winters with infrequent rainfall, moderate afternoon breezes, and generally fair weather. Occasional periods of strong Santa Ana winds and winter storms interrupt the otherwise mild weather pattern. The clouds and fog that form along the area's coastline rarely extend as far inland as western San Bernardino County. When morning clouds and fog form, they typically burn off quickly after sunrise. The most important weather pattern from an air quality perspective is associated with the warm season airflow across the populated areas of the Los Angeles Basin. This airflow brings polluted air into western San Bernardino County late in the afternoon. This transport pattern creates unhealthful air quality that may extend to the project site particularly during the summer months.

Winds are an important parameter in characterizing the air quality environment of a project site because they both determine the regional pattern of air pollution transport and control the rate of dispersion near a source. Daytime winds in western San Bernardino County are usually light breezes from off the coast as air moves regionally onshore from the cool Pacific Ocean to the warm Mojave Desert interior of Southern California. These winds allow for good local mixing, but as discussed above, these coastal winds carry significant amounts of industrial and automobile air pollutants from the densely urbanized western portion of the South Coast Air Basin into the interior valleys which become trapped by the mountains that border the eastern edge of the South Coast Air Basin.

In the summer, strong temperature inversions may occur that limit the vertical depth through which air pollution can be dispersed. Air pollutants concentrate because they cannot rise through the inversion layer and disperse. These inversions are more common and persistent during the summer months. Over time, sunlight produces photochemical reactions within this inversion layer that creates ozone, a particularly harmful air pollutant. Occasionally, strong thermal convections occur which allows the air pollutants to rise high enough to pass over the mountains and ultimately dilute the smog cloud.

In the winter, light nocturnal winds result mainly from the drainage of cool air off of the mountains toward the valley floor while the air aloft over the valley remains warm. This forms a type of inversion known as a radiation inversion. Such winds are characterized by stagnation and poor local mixing and trap pollutants such as automobile exhaust near their source. While these inversions may lead to air pollution "hot spots" in heavily developed coastal areas of the basin, there is not enough traffic volumes in inland valleys to cause any winter air pollution problems. Despite light wind conditions, especially at night and in the early morning, winter is generally a period of good air quality in the project vicinity.

The temperature and precipitation levels for the City of Redlands are shown below in Table 1. Table 1 shows that August is typically the warmest month and December is typically the coolest months. 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 April, with summers being almost completely dry.

Table 1
Redlands Monthly Climate Data[1]

Descriptor	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Max. Temperature	66.9	67.5	71.0	75.7	81.0	88.1	94.7	95.6	91.3	82.4	71.4	66.9
Avg. Min. Temperature	41.1	43.0	45.3	48.4	53.2	57.3	62.1	62.8	59.6	53.1	44.1	40.9
Avg. Total Precipitation (in.)	2.66	2.88	2.10	0.99	0.35	0.11	0.07	0.16	0.23	0.62	1.01	2.14

Notes:
(1) Source: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7306

Data taken from the Redlands, CA Monitoring Station.

3. 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.

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.

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.

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.

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.

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.

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.

Particulate Matter (PM)

Particulate matter 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.

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.

OTHER POLLUTANTS OF CONCERN

Toxic Air Contaminants

In addition to the above-listed criteria pollutants, toxic air contaminants (TACs) 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 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 2013 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.

Asbestos

Asbestos is listed as a TAC by 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 asbestoform 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 San Bernardino 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.

GREENHOUSE GASES

Constituent gases of the Earth's atmosphere, called atmospheric greenhouse gases (GHG), 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.

Water Vapor

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 in 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).

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 Fifth Assessment Report, 2014) Emissions of CO_2 from fossil fuel combustion and industrial processes contributed about 78% of the total GHG emissions increase from 1970 to 2010, with a similar percentage contribution for the increase during the period 2000 to 2010. Globally, economic and population growth continued to be the most important drivers of increases in CO_2 emissions from fossil fuel combustion. The contribution of population growth between 2000 and 2010 remained roughly identical to the previous three decades, while the contribution of economic growth has risen sharply.

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.

Nitrous Oxide (N_2O)

Concentrations of N_2O also began to rise at the beginning of the industrial revolution. In 1998, the global concentration was 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 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).

Chlorofluorocarbons (CFC)

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. 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.

Hydrofluorocarbons (HFC)

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 HFC-134a 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.

Perfluorocarbons (PFC)

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.

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.

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.

Global Warming Potential

The Global Warming Potential (GWP) was developed to allow comparisons of the global warming impacts of different gases. Specifically, it is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO_2). The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that time period. The time period usually used for GWPs is 100 years. GWPs provide a common unit of measure, which allows analysts to add up emissions estimates of different gases (e.g., to compile a national GHG inventory), and allows policymakers to compare emissions reduction opportunities across sectors and gases. 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	Global Warming Potential[2] (100 Year Horizon)
Carbon Dioxide (CO_2)	--[3]	1
Methane (CH_4)	12	28-36
Nitrous Oxide (NO)	114	298
Hydrofluorocarbons (HFCs)	1-270	12-14,800
Perfluorocarbons (PFCs)	2,600-50,000	7,390-12,200
Nitrogen trifluoride (NF_3)	740	17,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Notes:

(1) Source: http://www3.epa.gov/climatechange/ghgemissions/gases.html

(2) Compared to the same quantity of CO_2 emissions.

(3) Carbon dioxide's lifetime is poorly defined because the gas is not destroyed over time, but instead moves among different parts of the ocean–atmosphere–land system. Some of the excess carbon dioxide will be absorbed quickly (for example, by the ocean surface), but some will remain in the atmosphere for thousands of years, due in part to the very slow process by which carbon is transferred to ocean sediments.

4. AIR QUALITY MANAGEMENT

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.

International

Montreal Protocol

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.

The Paris Agreement

The Paris Agreement entered into force on 4 November 2016, thirty days after the date on which at least 55 Parties to the Convention accounting in total for at least an estimated 55 % of the total global greenhouse gas emissions have deposited their instruments of ratification, acceptance, approval or accession with the Depositary.

The Paris Agreement builds upon the Convention and – for the first time – brings all nations into a common cause to undertake take ambitious efforts to combat climate change and adapt to its effects, with enhanced support to assist developing countries to do so. As such, it charts a new course in the global climate effort.

The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. Additionally, the agreement aims to strengthen the ability of countries to deal with the impacts of climate change. To reach these ambitious goals, appropriate financial flows, a new technology framework and an enhanced capacity building framework will be put in place, thus supporting action by developing countries and the most vulnerable countries, in line with their own national objectives. The Agreement also provides for enhanced transparency of action and support through a more robust transparency framework. The Trump administration has recently indicated the United States federal government will no longer participate in the Paris agreement. However, the U.S. cannot technically withdraw from the Agreement until 2020.

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.

The EPA and the California Air Resource Board (CARB) 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.

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 suspended particulates (PM10 and PM2.5). 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).

According to the AQMP, in 2011 the Basin exceeded federal standards for either ozone or PM2.5 at one or more locations on a total of 124 days, based on the current federal standards for 8-hour ozone and 24-hour PM2.5. 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. The Administration hosted a roundtable that brought 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]

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 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

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

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 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 enacted on July 22, 2002, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. In 2005, the CARB submitted a "waiver" request to the EPA from a portion of the federal Clean Air Act in order to allow the State to set more stringent tailpipe emission standards for CO2 and other GHG emissions from passenger vehicles and light duty trucks. On December 19, 2007 the EPA announced that it denied the "waiver" request. On January 21, 2009, CARB submitted a letter to the EPA administrator regarding the State's request to reconsider the waiver denial. The EPA approved the waiver on June 30, 2009.

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.

While local government operations were not accounted for in achieving the 2020 emissions reduction, local land use changes are estimated to result in a reduction of 5 metric tons of CO_2e, which is approximately 3 percent of the 2020 GHG emissions reduction goal. In recognition of the critical role local governments will play in successful implementation of AB 32, CARB is recommending GHG reduction goals of 15 percent of 2010 levels by 2020 to ensure that municipal and community-wide emissions match the state's reduction target. According to the Measure Documentation Supplement to the Scoping Plan, local government actions and targets are anticipated to reduce vehicle miles by approximately 2 percent through land use planning, resulting in a potential GHG reduction of 2 metric tons of CO_2e (or approximately 1.2 percent of the GHG reduction target).

In May 2014, CARB released its *First Update to the Climate Change Scoping Plan* (CARB 2014). This *Update* identifies the next steps for California's leadership on climate change. While California continues on its path to meet the near-term 2020 greenhouse gas limit, it must also set a clear path toward long-term, deep GHG emission reductions. This report highlights California's success to date in reducing its GHG emissions and lays

the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050.

On January 20, 2017, CARB announced its release of a proposed plan to reduce greenhouse gas emissions by 40 percent below 1990 levels by 2030 – the most ambitious target in North America. The plan builds on the state's successful efforts to reduce emissions and outlines the most effective ways to reach the 2030 goal, including continuing California's Cap-and-Trade Program. The Final 2017 Scoping Plan Update was approved in November 2017.

SB 32, Pavley. California Global Warming Solutions Act of 2006

(1) The California Global Warming Solutions Act of 2006 designates the State Air Resources Board as the state agency charged with monitoring and regulating sources of emissions of greenhouse gases. The state board is required to approve a statewide greenhouse gas emissions limit equivalent to the statewide greenhouse gas emissions level in 1990 to be achieved by 2020 and to adopt rules and regulations in an open public process to achieve the maximum, technologically feasible, and cost-effective greenhouse gas emissions reductions. This bill would require the state board to ensure that statewide greenhouse gas emissions are reduced to 40% below the 1990 level by 2030.
(2) This bill would become operative only if AB 197 of the 2015–16 Regular Session is enacted and becomes effective on or before January 1, 2017. AB 197 requires that the California Air Resources Board, which directs implementation of emission-reduction programs, should target direct reductions at both stationary and mobile sources.

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 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 Resource 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 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 are provided and no specific mitigation measures are 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), 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.

On April 7, 2016, SCAG's Regional Council adopted the 2016-2040 Regional Transportation Plan/ Sustainable Communities Strategy (2016 RTP/SCS or Plan). The Plan is a long-range visioning plan that balances future mobility and housing needs with economic, environmental and public health goals. The Plan charts a course for closely integrating land use and transportation – so that the region can grow smartly and sustainably. It outlines more than $556.5 billion in transportation system investments through 2040. The Plan was prepared through a collaborative, continuous, and comprehensive process with input from local governments, county transportation commissions, tribal governments, non-profit organizations, businesses and local stakeholders within the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino and Ventura. In June 2016, SCAG received its conformity determination from the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) indicating that all air quality conformity requirements for the 2016 RTP/SCS and associated 2015 FTIP Consistency Amendment through Amendment 15-12 have been met.

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. CalEEMod modeling defaults to 2008 standards. 2013 Standards have been approved and are effective July 1, 2014.

California Code of Regulations (CCR) Title 24, Part 11

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 were effective July 1, 2014. 2016 Standards were adopted January 1, 2017.

All buildings for which an application for a building permit is submitted on or after January 1, 2017 must follow the 2016 standards. The 2016 standards are estimated to be approximately 28 percent more efficient than the 2013 standards. 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.

2016 CALGreen Code: During the 2016-2017 fiscal year, the Department of Housing and Community Development (HCD) updated CALGreen through the 2015 Triennial Code Adoption Cycle. HCD adopted three new definitions related to electric vehicle charging regulations. These definitions provided clarity to the code user as to the differences between an electric vehicle charging space and an electric vehicle charging station. HCD replaced the term "electric vehicle charging stations" with "electric vehicle charging spaces" since the term "electric vehicle charging space" better describes a space available for future installation of electric vehicle supply equipment, but with no electric vehicle charger installed.

HCD also increased the required construction waste reduction from 50 percent to 65 percent of the total building site waste. This increase aids in meeting CalRecycle's statewide solid waste recycling goal of 75 percent for 2020 as stated in Chapter 476, Statutes of 2011 (AB 341). HCD adopted new regulations requiring recycling areas for multifamily projects of five or more dwelling units. This regulation requires developers to provide readily accessible areas adequate in size to accommodate containers for depositing, storage and collection of non-hazardous materials (including organic waste) for recycling. This requirement assists businesses that were required as of April 1, 2016, to meet the requirements of Chapter 727, Statutes of 2014 (AB 1826).

HCD adopted new regulations to require information on photovoltaic systems and electric vehicle chargers to be included in operation and maintenance manuals. Currently, CALGreen section 4.410.1 Item 2(a) requires

operation and maintenance instructions for equipment and appliances. Photovoltaic systems and electric vehicle chargers are systems that play an important role in many households in California, and their importance is increasing every day. HCD incorporated these two terms in the existing language in order to provide clarity to code users as to additional systems requiring operation and maintenance instructions.

HCD updated the reference to Clean Air Standards of the United States Environmental Protection Agency applicable to woodstoves and pellet stoves. HCD also adopted a new requirement for woodstoves and pellet stoves to have a permanent label indicating they are certified to meet the emission limits. This requirement provides clarity to the code user and is consistent with the United States Environmental Protection Agency's New Source Performance Standards. HCD updated the list of standards which can be used for verification of compliance for exterior grade composite wood products. This list now includes four standards from the Canadian Standards Association (CSA): CSA O121, CSA O151, CSA O153 and CSA O325. HCD updated heating and air-conditioning system design references to the ANSI/ACCA 2 Manual J, ANSI/ACCA 1 Manual D, and ANSI/ACCA 3 Manual S to the most recent versions approved by ANSI. HCD adopted a new elective measure for hot water recirculation systems for water conservation. The United States Department of Energy estimates that 3,600 to 12,000 gallons of water per year can be saved by the typical household (with four points of hot water use) if a hot water recirculation system is installed.

Executive Order B-30-15

Executive Order B-30-15, establishing a new interim statewide greenhouse gas emission reduction target to reduce greenhouse gas emissions to 40 percent below 1990 levels by 2030, was signed by Governor Brown in April 2015.

Executive Order B-29-15

Executive Order B-29-15, mandates a statewide 25 percent reduction in potable water usage. EO B-29-15 signed into law on April 1, 2015.

Executive Order B-37-16

Executive Order B-37-16, continuing the State's adopted water reductions, was signed into law on May 9, 2016. The water reductions build off the mandatory 25 percent reduction called for in EO B-29-15.

SBX1 2

Signed into law in April 2011, SBX1 2, requires one-third of the state's electricity to come from renewable sources. The legislation increases California's current 20 percent renewables portfolio standard target in 2010 to a 33 percent renewables portfolio standard by December 31, 2020.

Senate Bill 350

Signed into law October 7, 2015, SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This will increase the use of Renewables Portfolio Standard (RPS) eligible resources, including solar, wind, biomass, geothermal, and others. In addition, SB 350 requires the state to double statewide energy efficiency savings in electricity and natural gas end uses by 2030. To help ensure these goals are met and the greenhouse gas emission reductions are realized, large utilities will be required to develop and submit Integrated Resource Plans (IRPs). These IRPs will detail how each entity will meet their customers resource needs, reduce greenhouse gas emissions and ramp up the deployment of clean energy resources.

Regional

The SCAQMD is the agency principally responsible for comprehensive air pollution control in the South Coast Air Basin. To that end, as a regional agency, the SCAQMD works directly with the Southern California Association of Governments (SCAG), county transportation commissions, and local governments and cooperates actively with all federal and state agencies.

South Coast Air Quality Management District

The SCAQMD develops rules and regulations, establishes permitting requirements for stationary sources, inspects emission sources, and enforces such measures through educational programs or fines, when necessary. The SCAQMD is directly responsible for reducing emissions from stationary, mobile, and indirect sources. It has responded to this requirement by preparing a sequence of AQMPs. On June 30, 2016, the SCAQMD released its Draft 2016 AQMP. The 2016 AQMP is a regional blueprint for achieving the federal air quality standards and healthful air.

The 2016 AQMP includes both stationary and mobile source strategies to ensure that rapidly approaching attainment deadlines are met, that public health is protected to the maximum extent feasible, and that the region is not faced with burdensome sanctions if the Plan is not approved or if the NAAQS are not met on time. As with every AQMP, a comprehensive analysis of emissions, meteorology, atmospheric chemistry, regional growth projections, and the impact of existing control measures is updated with the latest data and methods. The most significant air quality challenge in the Basin is to reduce nitrogen oxide (NOx) emissions sufficiently to meet the upcoming ozone standard deadlines. On March 23, 2017 CARB approved the 2016 AQMP. The primary goal of this Air Quality Management Plan is to meet clean air standards and protect public health, including ensuring benefits to environmental justice and disadvantaged communities. Now that the plan has been approved by CARB, it has been forwarded to the U.S. Environmental Protection Agency for its review. If approved by EPA, the plan becomes federally enforceable.

A revised draft of the 2012 AQMP was released on September, 2012, and was adopted by the SCAQMD Board on December 7, 2012. The 2012 AQMP is now awaiting approval from CARB and the U.S. EPA. The 2012 AQMP is being prepared in order to meet the federal Clean Air Act requirement that all 24-hour PM2.5 non-attainment areas prepare a SIP, which was required to be submitted to the U.S. EPA by December 14, 2012 and demonstrate attainment with the 24-hour PM2.5 standard by 2014. The 2012 AQMP demonstrates attainment of the federal 24-hour PM2.5 standard by 2014 in the Basin through adoption of all feasible measures, and therefore, no extension of the attainment date is needed.

The 2007 AQMP demonstrated attainment with the 1997 8-hour ozone (80 ppb) standard by 2023, through implementation of future improvements in control techniques and technologies. These “black box” emissions reductions represent 65 percent of the remaining NOx emission reductions by 2023 in order to show attainment with the 1997 8-hour ozone NAAQS. Given the magnitude of these needed emissions reductions, additional NOx control measures have been provided in this AQMP even though the primary purpose of this AQMP is to show compliance with 24-hour PM2.5 emissions standards.

During construction and operation, the project must comply with applicable rules and regulations. The following are rules the project may be required to comply with, either directly, or indirectly:

SCAQMD Rule 402

Prohibits a person from discharging 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.

SCAQMD Rule 403

Governs emissions of fugitive dust during construction and operation activities. Compliance with this rule is achieved through application of standard Best Management Practices, such as application of water or chemical stabilizers to disturbed soils, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 miles per hour, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph, and establishing a permanent ground cover on finished sites.

Rule 403 requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, SCAQMD Rule 403 requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off-site. Applicable dust suppression techniques from Rule 403 are summarized below. Implementation of these dust suppression techniques can reduce the fugitive dust generation (and thus the PM_{10} component). Compliance with these rules would reduce impacts on nearby sensitive receptors. Rule 403 measures may include but are not limited to the following:

- Apply nontoxic chemical soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for 10 days or more).
- Water active sites at least three times daily. (Locations where grading is to occur will be thoroughly watered prior to earthmoving.)
- Cover all trucks hauling dirt, sand, soil, or other loose materials, or maintain at least 0.6 meters (2 feet) of freeboard (vertical space between the top of the load and top of the trailer) in accordance with the requirements of California Vehicle Code section 23114.
- Reduce traffic speeds on all unpaved roads to 15 miles per hour (mph) or less.
- Suspension of all grading activities when wind speeds (including instantaneous wind gusts) exceed 25 mph.
- Bumper strips or similar best management practices shall be provided where vehicles enter and exit the construction site onto paved roads or wash off trucks and any equipment leaving the site each trip.
- Replanting disturbed areas as soon as practical.
- During all construction activities, construction contractors shall sweep on-site and off-site streets if silt is carried to adjacent public thoroughfares, to reduce the amount of particulate matter on public streets. All sweepers shall be compliant with SCAQMD Rule 1186.1, Less Polluting Sweepers.

SCAQMD Rule 445

Prohibits permanently installed wood burning devices into any new development. A wood burning device means any fireplace, wood burning heater, or pellet-fueled wood heater, or any similarly enclosed, permanently installed, indoor or outdoor device burning any solid fuel for aesthetic or space-heating purposes, which has a heat input of less than one million British thermal units per hour.

SCAQMD Rule 481

Applies to all spray painting and spray coating operations and equipment. The rule states that a person shall not use or operate any spray painting or spray coating equipment unless one of the following conditions is met:

(1) The spray coating equipment is operated inside a control enclosure, which is approved by the Executive Officer. Any control enclosure for which an application for permit for new construction, alteration, or change of ownership or location is submitted after the date of adoption of this rule shall be exhausted only through filters at a design face velocity not less than 100 feet per minute nor greater than 300 feet per minute, or through a water wash system designed to be equally effective for the purpose of air pollution control.
(2) Coatings are applied with high-volume low-pressure, electrostatic and/or airless spray equipment.

(3) An alternative method of coating application or control is used which has effectiveness equal to or greater than the equipment specified in the rule.

SCAQMD Rule 1108

Governs the sale, use, and manufacturing of asphalt and limits the volatile organic compound (VOC) content in asphalt used in the South Coast Air Basin. This rule would regulate the VOC content of asphalt used during construction. Therefore, all asphalt used during construction of the project must comply with SCAQMD Rule 1108.

SCAQMD Rule 1113

Governs the sale, use, and manufacturing of architectural coating and limits the VOC content in paints and paint solvents. This rule regulates the VOC content of paints available during construction. Therefore, all paints and solvents used during construction and operation of the project must comply with SCAQMD Rule 1113.

SCAQMD Rule 1143

Governs the manufacture, sale, and use of paint thinners and solvents used in thinning of coating materials, cleaning of coating application equipment, and other solvent cleaning operations by limiting their VOC content. This rule regulates the VOC content of solvents used during construction. Solvents used during the construction phase must comply with this rule.

SCAQMD Rule 1186

Limits the presence of fugitive dust on paved and unpaved roads and sets certification protocols and requirements for street sweepers that are under contract to provide sweeping services to any federal, state, county, agency or special district such as water, air, sanitation, transit, or school district.

SCAQMD Rule 1303

Governs the permitting of re-located or new major emission sources, requiring Best Available Control Measures and setting significance limits for PM_{10} among other pollutants.

SCAQMD Rule 1401

New Source Review of Toxic Air Contaminants, specifies limits for maximum individual cancer risk, cancer burden, and non-cancer acute and chronic hazard index from new permit units, relocations, or modifications to existing permit units, which emit toxic air contaminants.

SCAQMD Rule 1403

Asbestos Emissions from Demolition/Renovation Activities, specifies work practice requirements to limit asbestos emissions from building demolition and renovation activities, including the removal and associated disturbance of asbestos-containing materials (ACM).

SCAQMD Rule 2202

On-Road Motor Vehicle Mitigation Options, is to provide employers with a menu of options to reduce mobile source emissions generated from employee commutes, to comply with federal and state Clean Air Act requirements, Health & Safety Code Section 40458, and Section 182(d)(1)(B) of the federal Clean Air Act. It applies to any employer who employs 250 or more employees on a full or part-time basis at a worksite for a consecutive six-month period calculated as a monthly average.

In order to assist local agencies with direction on GHG emissions, the SCAQMD organized a working group and adopted Rules 2700, 2701, 2702, and 3002 which are described below.

Rules 2700 and 2701

The SCAQMD adopted Rules 2700 and 2701 on December 5, 2008, which establishes the administrative structure for a voluntary program designed to quantify GHG emission reductions. Rule 2701 provides specific protocols for private parties to follow to generate certified GHG emission reductions for projects within the district. Approved protocols include forest projects, urban tree planting, and manure management. The SCAQMD is currently developing additional protocols for other reduction measures. For a GHG emission reduction project to qualify, it must be verified and certified by the SCAQMD Executive Officer, who has 60 days to approve or deny the Plan. Upon approval of the Plan, the Executive Officer issues required to issue a certified receipt of the GHG emission reductions within 90 days.

Rule 2702

The SCAQMD adopted Rule 2702 on February 6, 2009, which establishes a voluntary air quality investment program from which SCAQMD can collect funds from parties that desire certified GHG emission reductions, pool those funds, and use them to purchase or fund GHG emission reduction projects within two years, unless extended by the Governing Board. Priority will be given to projects that result in co-benefit emission reductions of GHG emissions and criteria or toxic air pollutants within environmental justice areas. Further, this voluntary program may compete with the cap-and-trade program identified for implementation in CARB's Scoping Plan, or a Federal cap and trade program.

Rule 3002

The SCAQMD amended Rule 3002 on November 5, 2010 to include facilities that emit greater than 100,000 tons per year of CO_2e are required to apply for a Title V permit by July 1, 2011. A Title V permit is for facilities that are considered major sources of emissions.

Although the SCAQMD is responsible for regional air quality planning efforts, it does not have the authority to directly regulate air quality issues associated with plans and new development projects throughout the South Coast Air Basin. Instead, this is controlled through local jurisdictions in accordance to the California Environmental Quality Act (CEQA). In order to assist local jurisdictions with air quality compliance issues the CEQA Air Quality Handbook (SCAQMD CEQA Handbook) prepared by the SCAQMD (1993), with the most current updates found at http://www.aqmd.gov/ceqa/hdbk.html, was developed in accordance with the projections and programs of the AQMP. The purpose of the SCAQMD CEQA Handbook is to assist Lead Agencies, as well as consultants, project proponents, and other interested parties in evaluating a proposed project's potential air quality impacts. Specifically, the SCAQMD CEQA Handbook explains the procedures that the SCAQMD recommends be followed for the environmental review process required by CEQA. The SCAQMD CEQA Handbook provides direction on how to evaluate potential air quality impacts, how to determine whether these impacts are significant, and how to mitigate these impacts. The SCAQMD intends that by providing this guidance, the air quality impacts of plans and development proposals will be analyzed accurately and consistently throughout the South Coast Air Basin, and adverse impacts will be minimized.

SCAQMD Stakeholder Working Group

Since neither CARB nor the OPR has developed GHG emissions threshold, the SCAQMD formed a Working Group to develop significance thresholds related to GHG emissions. At the September 28, 2010 Working Group meeting, the SCAQMD released its most current version of the draft GHG emissions thresholds, which recommends a tiered approach that provides a quantitative annual thresholds of 10,000 MTCO2e for industrial uses.

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.

Local – City of Redlands

Local jurisdictions, such as the City of Redlands, have the authority and responsibility to reduce air pollution through its police power and decision-making authority. Specifically, the City is responsible for the assessment and mitigation of air emissions resulting from its land use decisions. The City is also responsible for the implementation of transportation control measures as outlined in the 2012 and 2016 AQMP. 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 City 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 City 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 County relies on the expertise of the SCAQMD and utilizes the SCAQMD CEQA Handbook as the guidance document for the environmental review of plans and development proposals within its jurisdiction.

The City of Redlands General Plan 2035 was adopted in December 2017 and contains the following air quality-related goals and policies that are applicable to the proposed project:

7.6 Air Quality Policies

Principles

7-P.44 Protect air quality within the city and support efforts for enhanced regional air quality.

7-P.45 Aim for a diverse and efficiently-operated ground transportation system that generates the minimum amount of pollutants feasible.

7-P.46 Increase average vehicle ridership during peak commute hours as a way of reducing vehicle miles traveled and peak period auto travel.

7-P.47 Cooperate in efforts to expand bus, rail, and other forms of mass transit in the portion of the South Coast Air Basin within San Bernardino County.

7-P.48 Involve environmental groups, the business community, and the general public in the formulation and implementation of programs that enhance air quality in the city and the region.

7-P.49 Protect sensitive receptors from exposure to hazardous concentrations of air pollutants.

Actions

7-A.144 To the extent practicable and feasible, maintain a system of air quality alerts (such as through the City website, internet, e-mail to City employees, and other tools) based on South Coast Air Quality Management District forecasts. Consider providing incentives to City employees to use alternative transportation modes during alert days.

7-A.145 Provide, whenever possible, incentives for carpooling, flex time, shortened work weeks, telecommuting, and other means of reducing vehicular miles traveled.

7-A.146 Promote expansion of all forms of mass transit to the urbanized portions of San Bernardino, Orange, Los Angeles, and Riverside counties. Support public transit providers in efforts to increase funding for transit improvements to supplement other means of travel.

7-A.147 Cooperate with the ongoing efforts of the U.S. Environmental Protection Agency, the South Coast Air Quality Management District, and the State of California Air Resources Board in improving air quality in the regional air basin.

7-A.148 Develop requirements for retrofitting existing residential buildings within the 500-foot AQMD buffer along the freeway to abate air pollution, and limitations on new residential developments within the buffer.

7-A.149 Ensure that construction and grading projects minimize short-term impacts to air quality.

a. Require grading projects to provide a stormwater pollution prevention plan (SWPPP) in compliance with City requirements, which include standards for best management practices (BMPs) that control pollutants from dust generated by construction activities and those related to vehicle and equipment cleaning, fueling, and maintenance;
b. Require grading projects to undertake measures to minimize mono-nitrogen oxides (NOx) emissions from vehicle and equipment operations; and
c. Monitor all construction to ensure that proper steps are implemented.

7-A.150 Establish and implement a Transportation Demand Management (TDM) Program.

7-A.151 Convert the City fleet to zero emissions vehicles where financially feasible and provide associated infrastructure for such vehicles:

7-A.152 Enforce regulations to prevent trucks from excessive idling in residential areas.

7-A.153 Require applicants for sensitive land uses (e.g. residences, schools, daycare centers, playgrounds, and medical facilities) to site development and/or incorporate design features (e.g. pollution prevention, pollution reduction, barriers, landscaping, ventilation systems, or other measures) to minimize the potential impacts of air pollution on sensitive receptors.

7-A.154 Require applicants for sensitive land uses within a Proposition 65 warning contour to conduct a health risk assessment and mitigate any health impacts to a less than significant level.

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. Estimates of the existing emissions in the Basin provided in the Final 2016 Air Quality Management Plan prepared by SCAQMD (March 2017), indicate that collectively, mobile sources account for 60 percent of the VOC, 90 percent of the NOx emissions,

95 percent of the CO emissions and 34 percent of directly emitted PM2.5, with another 13 percent of PM2.5 from road dust.

The SCAQMD has divided the South Coast Air Basin into 38 air-monitoring areas with a designated ambient air monitoring station representative of each area. The project site is located in air monitoring area 35, which is located in San Bernardino County and covers the area from Loma Linda to Yucaipa. The nearest air monitoring station to the project site is the Redlands-Dearborn Monitoring Station (Redlands Station). The Redlands Station is located approximately 3.54 miles northeast of the project site at 500 North Dearborn Street, Redlands. In order to obtain all necessary data, the San Bernardino – 4th Street Monitoring Station (San Bernardino Station) was also used. The San Bernardino Station is located approximately 5.08 miles northwest of the project site at 24302 4th Street, San Bernardino. Table 5 presents the monitored pollutant levels from the Redlands and San Bernardino 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 particulate matter (PM10 and PM2.5) are the air pollutants of primary concern in the project area, which are detailed below. Where state and federal emissions are exceeded, the values have been bolded.

Ozone

During the 2015 to 2017 monitoring period, the State 1-hour concentration standard for ozone has been exceeded between 44 and 79 days each year at the Redlands Station. The State 8-hour ozone standard has been exceeded between 77 and 115 days each year over the past three years at the Redlands Station. The Federal 8-hour ozone standard was exceeded between 76 and 114 days each year over the past three years at the Redlands Station.

Ozone 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 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 San Bernardino 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 San Bernardino Station did not record an exceedance of the State or Federal NO_2 standards for the last three years.

Particulate Matter

During the 2015 to 2017 monitoring period, the State 24-hour concentration standards for PM10 were exceeded for only two days in 2015 at the Redlands Station. Over the past three years, the Federal 24-hour standard for PM10 has not been exceeded at the Redlands Station.

The Federal 24 hour standard for PM2.5 has been exceeded between 1 and 2 days each year at the San Bernardino Station. There does not appear to be a noticeable trend for PM10 or PM2.5 in either maximum particulate concentrations or days of exceedances in the area. 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[1]

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	0.070 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.

Notes:
(1) Source: http://www3.epa.gov/climatechange/ghgemissions/gases.html

Table 4
South Coast Air Basin Attainment Status

Pollutant	State Status[1]	National Status[2]
Ozone	Nonattainment	Nonattainment (Extreme)
Carbon Monoxide	Attainment	Attainment/Unclassified
Nitrogen Dioxide	Attainment	Attainment/Unclassified
Sulfur Dioxide	Attainment	Attainment/Unclassified
PM10	Nonattainment	Attainment (Maintenance)
PM2.5	Nonattainment	Nonattainment (Moderate)

Notes:
(1) Source of State status: California Air Resources Board June 2015/2017.

(2) Source of National status: http://www3.epa.gov/airquality/greenbk/index.html and CARB 2015

Table 5
Local Area Air Quality Levels from the Redlands Air Monitoring Station[1]

Pollutant (Standard)[2]		Year		
		2015	2016	2017
Ozone:	Maximum 1-Hour Concentration (ppm)	0.137	0.145	0.156
	Days > CAAQS (0.09 ppm)	44	55	79
	Maximum 8-Hour Concentration (ppm)	0.115	0.119	0.135
	Days > NAAQS (0.070 ppm)	76	97	114
	Days > CAAQS (0.070 ppm)	77	100	115
Carbon Monoxide:[3]	Maximum 8-Hour Concentration (ppm)	*	*	*
	Days > NAAQS (9 ppm)[3]	0	0	0
Nitrogen Dioxide:[3]	Maximum 1-Hour Concentration (ppm)	71.400	60.100	65.800
	Days > NAAQS (0.25 ppm)	0	0	0
Inhalable Particulates (PM10):	Maximum 24-Hour Concentration (µg/m^3)	95.0	72.0	77.0
	Days > NAAQS (150 µg/m^3)	0	0	0
	Days > CAAQS (50 µg/m^3)	2	*	*
	Annual Average (µg/m^3)	24.7	27.8	26.2
Ultra-Fine Particulates (PM2.5):[3]	Maximum 24-Hour Concentration (µg/m^3)	53.5	53.5	38.2
	Days > NAAQS (35 µg/m^3)	2	1	1
	Annual Average (µg/m^3)	10.7	11.1	11.4
	Annual > NAAQS (15 µg/m^3)	no	no	no
	Annual > CAAQS (12 µg/m^3)	no	no	no

Notes:

(1) Source: http://www.arb.ca.gov/adam/

Data from Redlands-Dearborn monitoring station, unless noted.

(2) CAAQS = California Ambient Air Quality Standard; NAAQS = National Ambient Air Quality Standard; ppm = parts per million

(3) Data from San Bernardino 4th Street monitoring station.

* Insufficient data available to determine value or pollutant not monitored.

5. AIR QUALITY STANDARDS

REGIONAL AIR QUALITY

Many air quality impacts that derive from dispersed mobile sources, which are the dominate pollution generators in the basin, often occurs hours later and miles away after photochemical processes have converted primary exhaust pollutants into secondary contaminants such as ozone. The incremental regional air quality impact of an individual project is generally very small and difficult to measure. Therefore, the SCAQMD has developed significance thresholds based on the volume of pollution emitted rather than on actual ambient air quality because the direct air quality impact of a project is not quantifiable on a regional scale. The SCAQMD CEQA Handbook states that any project in the South Coast Air Basin with daily emissions that exceed any of the identified significance thresholds should be considered as having an individually and cumulatively significant air quality impact. For the purposes to this air quality impact analysis, a regional air quality impact would be considered significant if emissions exceed the SCAQMD significance thresholds identified in Table 6.

LOCAL AIR QUALITY

Project-related construction air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the South Coast Air Basin. In order to assess local air quality impacts the SCAQMD has developed Localized Significant Thresholds (LSTs) to assess the project-related air emissions in the project vicinity. The SCAQMD has also provided Final Localized Significant Threshold Methodology (LST Methodology), June 2003, which details the methodology to analyze local air emission impacts. The Localized Significant Threshold Methodology found that the primary emissions of concern are NO_2, CO, PM10, and PM2.5.

The significance thresholds for the local emissions of NO_2 and CO are determined by subtracting the highest background concentration from the last three years of these pollutants from Table 5 above, from the most restrictive ambient air quality standards for these pollutants outlined in the Localized Significant Thresholds. Table 6 shows the Localized Significant Thresholds for NO_2, CO, and PM10 and PM2.5.

TOXIC AIR CONTAMINANTS

Construction

The 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 30-year exposure period because carcinogenic risk is directly related to sustain exposure. In contrast, construction activities for the project are only expected to last approximately twelve months. Thus, the duration of construction activities would represent only a small fraction of the 30-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 consists of 412 multi-family (low-rise) attached residential dwelling units and will not be a source of toxic air contaminants. Sensitive receptors would not be exposed to toxic sources of air pollution.

ODOR IMPACTS

The SCAQMD CEQA Handbook states that an odor impact would occur if the proposed project creates an odor nuisance pursuant to SCAQMD 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.

GREENHOUSE GASES

The CEQA Guidelines recommend that a lead agency consider the following when assessing the significance of impacts from GHG emissions on the environment:

- The extent to which the project may increase (or reduce) GHG emissions as compared to the existing environmental setting;
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project;
- The extent to which the project complies with regulations or requirements adopted to implement an adopted statewide, regional, or local plan for the reduction or mitigation of GHG emissions[2].

Regional – South Coast Air Quality Management District

The project is within the South Coast Air Basin, which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD).

SCAQMD Regulation XXVII, Climate Change

SCAQMD Regulation XXVII currently includes three rules:

- The purpose of Rule 2700 is to define terms and post global warming potentials.
- The purpose of Rule 2701, SoCal Climate Solutions Exchange, is to establish a voluntary program to encourage, quantify, and certify voluntary, high quality certified greenhouse gas emission reductions in the SCAQMD.
- Rule 2702, Greenhouse Gas Reduction Program, was adopted on February 6, 2009. The purpose of this rule is to create a Greenhouse Gas Reduction Program for greenhouse gas emission reductions in the SCAQMD. The SCAQMD will fund projects through contracts in response to requests for proposals or purchase reductions from other parties.

A variety of agencies have developed greenhouse gas emission thresholds and/or have made recommendations for how to identify a threshold. However, the thresholds for projects in the jurisdiction of the SCAQMD remain in flux. The California Air Pollution Control Officers Association explored a variety of threshold approaches, but did not recommend one approach (2008). The ARB recommended approaches for setting interim significance thresholds (California Air Resources Board 2008b), in which a draft industrial project threshold suggests that non-transportation related emissions under 7,000 MTCO2e per year would

[2] The Governor's Office of Planning and Research recommendations include a requirement that such a plan must be adopted through a public review process and include specific requirements that reduce or mitigate the project's incremental contribution of GHG emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable, notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

be less than significant; however, the ARB has not approved those thresholds and has not published anything since then. The SCAQMD is in the process of developing thresholds, as discussed below.

SCAQMD Threshold Development

On December 5, 2008, the SCAQMD Governing Board adopted an interim greenhouse gas significance threshold for stationary sources, rules, and plans where the SCAQMD is lead agency (SCAQMD permit threshold). The SCAQMD permit threshold consists of five tiers. However, the SCAQMD is not the lead agency for this project. Therefore, the five permit threshold tiers do not apply to the proposed project.

The SCAQMD is in the process of preparing recommended significance thresholds for greenhouse gases for local lead agency consideration ("SCAQMD draft local agency threshold"); however, the SCAQMD Board has not approved the thresholds as of the date of the Notice of Preparation. The current draft thresholds consist of the following tiered approach:

- Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.
- Tier 2 consists of determining whether the project is consistent with a greenhouse gas reduction plan. If a project is consistent with a qualifying local greenhouse gas reduction plan, it does not have significant greenhouse gas emissions.
- Tier 3 consists of screening values, which the lead agency can choose, but must be consistent with all projects within its jurisdiction. A project's construction emissions are averaged over 30 years and are added to a project's operational emissions. If a project's emissions are under one of the following screening thresholds, then the project is less than significant:
  - All land use types: 3,000 MTCO2e per year
  - Based on land use type: residential: 3,500 MTCO2e per year; commercial: 1,400 MTCO2e per year; or mixed use: 3,000 MTCO2e per year.
  - Based on land type: Industrial (where SCAQMD is the lead agency), 10,000 MTCO2e per year.
- Tier 4 has the following options:
  - Option 1: Reduce emissions from business as usual (BAU) by a certain percentage; this percentage is currently undefined.
  - Option 2: Early implementation of applicable AB 32 Scoping Plan measures.
  - Option 3, 2020 target for service populations (SP), which includes residents and employees: 4.8 MTCO2e/SP/year for projects and 6.6 MTCO2e/SP/year for plans;
  - Option 3, 2035 target: 3.0 MTCO2e/SP/year for projects and 4.1 MTCO2e/SP/year for plans.
- Tier 5 involves mitigation offsets to achieve target significance threshold.

The SCAQMD's draft threshold uses the Executive Order S-3-05 goal as the basis for the Tier 3 screening level. Achieving the Executive Order's objective would contribute to worldwide efforts to cap carbon dioxide concentrations at 450 ppm, thus stabilizing global climate. Specifically, the Tier 3 screening level for stationary sources is based on an emission capture rate of 90 percent for all new or modified projects. A 90 percent emission capture rate means that 90 percent of total emissions from all new or modified stationary source projects would be subject to a CEQA analysis, including a negative declaration, a mitigated negative declaration, or an environmental impact report, which includes analyzing feasible alternatives and imposing feasible mitigation measures. A GHG significance threshold based on a 90 percent emission capture rate may be more appropriate to address the long-term adverse impacts associated with global climate change because most projects will be required to implement GHG reduction measures. Further, a 90 percent emission capture rate sets the emission threshold low enough to capture a substantial fraction of future stationary source projects that will be constructed to accommodate future statewide population and economic growth, while setting the emission threshold high enough to exclude small projects that will in aggregate contribute a relatively small fraction of the cumulative statewide GHG emissions. This assertion is based on the fact that staff estimates that these GHG emissions would account for slightly less than one percent of future 2050 statewide GHG emissions target (85 MMTCO2eq/year). In addition, these small projects may be subject to

future applicable GHG control regulations that would further reduce their overall future contribution to the statewide GHG inventory. Finally, these small sources are already subject to BACT for criteria pollutants and are more likely to be single-permit facilities, so they are more likely to have few opportunities readily available to reduce GHG emissions from other parts of their facility.

Local – City of Redlands

The City of Redlands issued a Hearing Draft of the City of Redlands Climate Action Plan (CAP) in April 2017. The CAP was adopted in December 2017. The CAP was designed to reinforce the City's commitment to reducing greenhouse gas (GHG) emissions and to show how the City is to comply with the State of California's GHG emission reduction standards. The CAP includes goals and policies to promote energy efficiency, waste reduction, and resource conservation and recycling. The CAP's GHG emission targets and goals are based on meeting the goals in EO B-30-15 and SB 32 and following the CAP guidelines established in the 2017 Scoping Plan. The CAP includes emissions targets of 6.0 MTCO2e per capita per year for 2030 and 5.0 MTCO2e per capita per year for 2035.

In addition, the City of Redlands adopted the Redlands Community Sustainability Plan (March, 2011) which details goals and policies to reduce overall City energy consumption and increase the use of renewable energy. The goals and policies in the strategies include:

EE1 Promote energy efficiency and conservation technologies and practices that reduce the use of nonrenewable resources by both City government and the community.
GB1 Adopt broadly accepted standards for green building.
GB5 Provide assistance to the development community in adopting economically viable and ecologically responsible green building strategies.
CF1 Commit to purchasing Products and Services that are Climate Friendly.
LU4 Create pedestrian-friendly neighborhoods.

Thresholds of Significance for this Project

To determine whether the project's GHG emissions are significant, this analysis initially uses the tier 3 SCAQMD draft screening threshold of 3,000 metric tons CO2e per year for all land uses and then, if the tier 3 screening threshold was exceeded, then the project's emissions would be compared to the SCAQMD tier 4 2020 Target Service Population Threshold of 4.8 MTCO2e/SP/year. Project's emissions were also compared to the CAP's most conservative emissions target of 5.0 MTCO2e per capita per year for 2035.

Table 6
SCAQMD Air Quality Significance Thresholds[1]

Mass Daily Thresholds		
Pollutant	Construction (lbs/day)	Operation (lbs/day)
NOx	100	55
VOC	75	55
PM10	150	150
PM2.5	55	55
SOx	150	150
CO	550	550
Lead	3	3

Toxic Air Contaminants, Odor and GHG Thresholds	
TACs	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index > 1.0 (project increment)
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402
GHG	10,000 MT/yr CO2e for industrial facilities

Ambient Air Quality Standards for Criteria Pollutants	
Pollutant	SCAQMD Standards
NO2 -1-hour average	0.18 ppm (338 µg/m^3)
PM10 -24-hour average Construction Operations	 10.4 µg/m^3 2.5 ug/m^3
PM2.5 -24-hour average Construction Operations	 10.4 µg/m^3 2.5 µg/m^3
SO2 1-hour average 24-hour average	 0.25 ppm 0.04 ppm
CO 1-hour average 8-hour average	 20 ppm (23,000 µg/m^3) 9 ppm (10,000 µg/m^3)
Lead 30-day average Rolling 3-month average Quarterly average	 1.5 µg/m^3 0.15 µg/m^3 1.5 µg/m^3

Notes:
(1) Source: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2

6. 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 phasing, duration, and required equipment for the construction of the proposed project were obtained from the project applicant. The construction activities for the proposed project are anticipated to include: demolition of approximately 19,000 square feet of existing single-family detached residential dwelling units and industrial sheds, grading of approximately 18.94 acres, construction of 412 multi-family (low-rise) attached residential dwelling units, a 14,662 square foot clubhouse, approximately 7.75 acres of landscaping/detention basins/sidewalks, paving of a parking lot with 589 parking stalls and 130 garage stalls, and application of architectural coatings.

Construction is expected to start in April 2019 and last approximately one year. The project is estimated to require approximately 59,100 cubic yards of import during grading. The project is expected to be operational in 2020.

CONSTRUCTION-RELATED REGIONAL IMPACTS

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

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 2016.3.2. CalEEMod is a computer model published by the SCAQMD for estimating air pollutant emissions. The CalEEMod program uses the EMFAC2014 computer program to calculate the emission rates specific for the southwestern portion of San Bernardino County for construction-related employee vehicle trips and the OFFROAD2011 computer program to calculate emission rates for heavy truck operations. EMFAC2014 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 were 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 will be required to comply with existing SCAQMD rules for the reduction of fugitive dust emissions. SCAQMD Rule 403 establishes these procedures. Compliance with this rule is achieved through application of standard best management practices in construction and operation activities, such as application of water or chemical stabilizers to disturbed soils, managing haul road dust by application of water, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 mph, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph and establishing a permanent, stabilizing ground cover on finished sites. In addition, projects that disturb 50 acres or more of soil or move 5,000 cubic yards of materials per day are required to submit a Fugitive Dust Control Plan or a Large Operation Notification Form to SCAQMD. Based on the size of the Project area (approximately 18.94 net acres) a Fugitive Dust Control Plan or Large Operation Notification would not be required.

SCAQMD's Rule 403 minimum requirements require that the application of the best available dust control measures are used for all grading operations and include the application of water or other soil stabilizers in sufficient quantity to prevent the generation of visible dust plumes. Compliance with Rule 403 would require

the use of water trucks during all phases where earth moving operations would occur. Compliance with Rule 403 is required.

SCAQMD's Rule 1403 details the requirements for demolition and renovation activities include asbestos surveying, notification, asbestos-containing materials (ACM) removal procedures and time schedules, ACM handling and clean-up procedures, and storage, disposal, and landfilling requirements for asbestos-containing waste materials (ACWM). All operators are required to maintain records, including waste shipment records, and are required to use appropriate warning labels, signs, and markings. Compliance with Rule 1403 is required.

The phases of the construction activities which have been analyzed below are: (1) demolition, (2) grading, (3) building construction, (4) paving, and (5) application of architectural coatings. For details on construction modeling, please see Appendix B.

Per SCAQMD Rule 1113 as amended on June 3, 2011, the architectural coatings applied to buildings after January 1, 2014 will be limited to an average of 50 grams per liter or less and 100 grams per liter VOC content for traffic coatings. Paints applied to buildings during project construction will be limited to 30 grams per liter VOC content.

Project Impacts

The construction-related criteria pollutant emissions for each phase are shown below in Table 7. Table 7 shows that, with the incorporation of mitigation limiting architectural coating for buildings to 30 grams per liter VOC (please see Mitigation Measure 1 in Section X of this report), none of the analyzed criteria pollutants would exceed the regional emissions thresholds. Therefore, with incorporation of mitigation, a less than significant regional air quality impact would occur from construction of the proposed project.

CONSTRUCTION-RELATED LOCAL IMPACTS

Construction-related air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the South Coast Air Basin. The proposed project has been analyzed for the potential local air quality impacts created from: construction-related fugitive dust and diesel emissions; from toxic air contaminants; and from construction-related odor impacts.

Local Air Quality Impacts from Construction

The SCAQMD has published a "Fact Sheet for Applying CalEEMod to Localized Significance Thresholds" (South Coast Air Quality Management District 2011b). CalEEMod calculates construction emissions based on the number of equipment hours and the maximum daily disturbance activity possible for each piece of equipment. In order to compare CalEEMod reported emissions against the localized significance threshold lookup tables, the CEQA document should contain in its project design features or its mitigation measures the following parameters:

(1) The off-road equipment list (including type of equipment, horsepower, and hours of operation) assumed for the day of construction activity with maximum emissions.
(2) The maximum number of acres disturbed on the peak day.
(3) Any emission control devices added onto off-road equipment.
(4) Specific dust suppression techniques used on the day of construction activity with maximum emissions.

The CalEEMod output sheets included in Appendix B show the equipment used for this analysis.

As shown in Table 8, the maximum number of acres disturbed in a day would be five (5) acres during grading.

The local air quality emissions from construction were analyzed using the SCAQMD's Mass Rate Localized Significant Threshold Look-up Tables and the methodology described in Localized Significance Threshold Methodology prepared by SCAQMD (revised July 2008). The Look-up Tables were developed by the SCAQMD in order to readily determine if the daily emissions of CO, NOx, PM10, and PM2.5 from the proposed project could result in a significant impact to the local air quality. The emission thresholds were calculated based on the East San Bernardino Valley source receptor area (SRA 35) and, a disturbance area of five acres per day. The nearest sensitive receptors are the existing residential uses located adjacent to north, south, east, and west of the proposed project; therefore, the SCAQMD Look-up Tables for 25 meters were used. Table 9 shows the on-site emissions from the CalEEMod model for the different construction phases and the emissions thresholds.

The data provided in Table 9 shows that none of the analyzed criteria pollutants would exceed the local emissions thresholds at the nearest sensitive receptors. Therefore, a less than significant local air quality impact would occur from construction of the proposed project.

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 SCAQMD 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 30-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., 30 years) substantial source of toxic air contaminant emissions and corresponding individual cancer risk. Furthermore, construction-based particulate matter (PM) emissions (including diesel exhaust emissions) do not exceed any local or regional thresholds. Therefore, no significant short-term toxic air contaminant impacts would occur during construction of the proposed project.

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. 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 7
Construction-Related Regional Pollutant Emissions[1]

Activity		Pollutant Emissions (pounds/day)					
		VOC	NOx	CO	SO_2	PM10	PM2.5
Demolition	On-Site[2]	0.92	18.31	24.67	0.04	1.23	0.92
	Off-Site[3]	0.12	1.21	0.91	0.01	0.25	0.07
	Subtotal	**1.04**	**19.52**	**25.59**	**0.04**	**1.48**	**0.99**
Grading	On-Site[2]	1.52	29.98	36.72	0.06	4.77	2.72
	Off-Site[3]	1.84	65.53	11.62	0.20	4.76	1.45
	Subtotal	**3.36**	**95.51**	**48.34**	**0.26**	**9.53**	**4.17**
Building Construction	On-Site[2]	2.72	24.55	20.37	0.03	1.54	1.44
	Off-Site[3]	3.91	19.40	31.65	0.11	7.42	2.09
	Subtotal	**6.63**	**43.96**	**52.03**	**0.14**	**8.96**	**3.53**
Paving	On-Site[2]	2.05	14.07	14.65	0.02	0.75	0.69
	Off-Site[3]	0.08	0.06	0.67	0.00	0.17	0.05
	Subtotal	**2.13**	**14.12**	**15.33**	**0.02**	**0.92**	**0.74**
Architectural Coating[4]	On-Site[2]	58.96	1.68	1.83	0.00	0.11	0.11
	Off-Site[3]	0.62	0.42	5.08	0.01	1.27	0.34
	Subtotal	**59.57**	**2.10**	**6.91**	**0.02**	**1.38**	**0.45**
Total for overlapping phases[5]		**68.34**	**60.18**	**74.27**	**0.18**	**11.26**	**4.72**
SCAQMD Thresholds		**75**	**100**	**550**	**150**	**150**	**55**
Exceeds Thresholds?		no	no	no	no	no	no

Notes:
(1) Source: CalEEMod Version 2016.3.2
(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) Architectural coating includes mitigation of 30 g/L VOC for building and 100 g/L for traffic paints.

Table 8
Maximum Number of Acres Disturbed Per Day[1]

Activity	Equipment	Number	Acres/8hr-day	Total Acres
Demolition	Excavators	3	0.5	1.5
	Rubber Tired Dozers	2	0.5	1
Total Per Phase		-	-	2.5
Site Grading	Graders	1	0.5	0.5
	Rubber Tired Dozers	1	0.5	0.5
	Excavators	2	0.5	1
	Scrapers	2	1	2
	Tractors/Loaders/Backhoes	2	0.5	1
Total Per Phase		-	-	5

Notes:
(1) Source: South Coast AQMD, Fact Sheet for Applying CalEEMod to Localized Significance Thresholds, 2011b.

Table 9
Local Construction Emissions at the Nearest Receptor[1]

Activity	On-Site Pollutant Emissions (pounds/day)			
	NOx	CO	PM10	PM2.5
Demolition	18.31	24.67	1.23	0.92
Grading	29.98	36.72	4.77	2.72
Building Construction	24.55	20.37	1.54	1.44
Paving	14.07	14.65	0.75	0.69
Architectural Coating	1.68	1.83	0.11	0.11
SCAQMD Thresholds for 25 meters (82 feet)[2]	270	2,075	14	9
Exceeds Threshold?	no	no	no	no

Notes:

(1) Source: Calculated from CalEEMod and SCAQMD's Mass Rate Look-up Tables for 5 acres in SRA 35 East San Bernardino Valley.

(2) The nearest sensitive receptors are the single-family detached residential dwelling units located adjacent to the north, south, east, and west of the project site; therefore, the 25 meter threshold was used.

7. 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 due to: regional air quality and local air quality impacts with the on-going operations of the proposed project.

OPERATIONS-RELATED REGIONAL AIR QUALITY IMPACTS

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

Operations-Related Criteria Pollutants Analysis

The operations-related criteria air quality impacts created by the proposed project have been analyzed through use of the CalEEMod model. The operating emissions were based on the year 2020, which is the anticipated opening year for the proposed project. Eight single-family detached residential dwelling units, a 4,000 square foot specialty trade contractor, and a 1.2 acre nursery wholesale are to be removed from the project site and the reductions in operational emissions from the elimination of these uses are included in Tables 10 and 11. 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 vehicle miles generated from the proposed project. The vehicle trips associated with the proposed project have been analyzed by inputting the project-generated vehicular trips from the SD Homes Redlands Apartments Traffic Impact Analysis prepared by Kunzman Associates, Inc. (September 9, 2018), into the CalEEMod Model. The Traffic Impact Analysis found that the proposed project would generate approximately 3,016 vehicle trips per day (2,736 vehicle trips per day with reduction of existing uses). The trip generation rate is 7.32 trips per dwelling unit for the proposed multi-family attached residential dwelling units. Existing land uses to be demolished were found to have trip generation rates of 9.44 trips per dwelling unit per day for the single-family detached residential dwelling units, 10.22 trips per thousand square foot per day for the specialty trade contractor, and 19.5 trips per acre per day for the nursery wholesale use. The program then applies the emission factors for each trip which is provided by the EMFAC2014 model to determine the vehicular traffic pollutant emissions.

Area Sources

Area sources include emissions from consumer products, landscape equipment and architectural coatings. The area source emissions were based on the on-going use of the proposed 412 multi-family (low-rise) attached residential dwelling units in the CalEEMod model. In order to account for SCAQMD Rule 445, no wood burning stoves or fireplaces will be included. 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. The energy usage emissions were based on the on-going use of the proposed 412 multi-family (low-rise) attached residential dwelling units in the CalEEMod model. No changes were made to the default energy usage parameters.

Project Impacts

The worst-case summer or winter criteria pollutant emissions created from the proposed project's long-term operations have been calculated and are summarized below in Table 10. Table 10 shows that the proposed project would exceed SCAQMD regional thresholds for NOx. Therefore, a potentially significant regional air quality impact would occur from operation of the proposed project and mitigation measures are required to reduce the project's NOx emissions.

The NOx emissions would be primarily from mobile sources. Mitigation has been provided in Section X, Mitigation Measures, to reduce the project's total NOx emissions. Those mitigated values are shown in Table 11.

The data in Table 11 shows with incorporation of mitigation measures 2 through 4, together with the CAPCOA-based mobile land use reduction measures LUT-1 Increased Density, LUT-4 Improve Destination Accessibility, LUT-5 Increase Transit Accessibility, and SDT-1 Improve Pedestrian Network (please see notes in the CalEEMod output in Appendix B) emissions from the operation of the proposed project no longer exceed SCAQMD operational thresholds for NOx. Therefore, with mitigation, a less than significant regional air quality impact would occur from operation of the proposed project.

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 by nature.

The project area is out of attainment for both ozone and PM10 particulate matter. Construction and operation of cumulative projects will further degrade the local air quality, as well as the air quality of the South Coast Air Basin. The greatest cumulative impact on the quality of regional air cell will be the incremental addition of pollutants mainly from increased traffic volumes 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 SCAQMD methodology, projects that do not exceed the SCAQMD criteria or can be mitigated to less than criteria levels are not significant and do not add to the overall cumulative impact. However, with respect to long-term emissions, with incorporation of mitigation, this project would create a less than significant cumulative impact.

OPERATIONS-RELATED LOCAL AIR QUALITY IMPACTS

Project-related air emissions may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the South Coast Air Basin. The proposed project has been analyzed for the potential local CO emission impacts from the project-generated vehicular trips and from the potential local air quality impacts from on-site operations. The following analysis analyzes the vehicular CO emissions, local impacts from on-site operations, and odor impacts.

Local CO Emission Impacts from Project-Generated Vehicular Trips

CO is the pollutant of major concern along roadways because the most notable source of CO is motor vehicles. For this reason, CO concentrations are usually indicative of the local air quality generated by a roadway network and are used as an indicator of potential local air quality impacts. Local air quality impacts can be

assessed by comparing future without and with project CO levels to the State and Federal CO standards which were presented in above in Section V.

To determine if the proposed project could cause emission levels in excess of the CO standards discussed above in Section V, a sensitivity analysis is typically conducted to determine the potential for CO "hot spots" at a number of intersections in the general project vicinity. Because of reduced speeds and vehicle queuing, "hot spots" typically occur at high traffic volume intersections with a Level of Service E or worse.

The analysis prepared for CO attainment in the South Coast Air Basin by the SCAQMD can be used to assist in evaluating the potential for CO exceedances in the South Coast Air Basin. CO attainment was thoroughly analyzed as part of the SCAQMD's 2003 Air Quality Management Plan (2003 AQMP) and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan). As discussed in the 1992 CO Plan, peak carbon monoxide concentrations in the South Coast Air Basin are due to unusual meteorological and topographical conditions, and not due to the impact of particular intersections. Considering the region's unique meteorological conditions and the increasingly stringent CO emissions standards, CO modeling was performed as part of 1992 CO Plan and subsequent plan updates and air quality management plans. In the 1992 CO Plan, a CO hot spot analysis was conducted for four busy intersections in Los Angeles at the peak morning and afternoon time periods. The intersections evaluated included: Long Beach Boulevard and Imperial Highway (Lynwood); Wilshire Boulevard and Veteran Avenue (Westwood); Sunset Boulevard and Highland Avenue (Hollywood); and La Cienega Boulevard and Century Boulevard (Inglewood). These analyses did not predict a violation of CO standards. The busiest intersection evaluated was that at Wilshire Boulevard and Veteran Avenue, which has a daily traffic volume of approximately 100,000 vehicles per day. The Los Angeles County Metropolitan Transportation Authority evaluated the Levels of Service in the vicinity of the Wilshire Boulevard/Veteran Avenue intersection and found it to be Level of Service E during the morning peak hour and Level of Service F during the afternoon peak hour.

The Traffic Impact Analysis showed that the project would only generate a maximum of approximately 3,016 trips per day (2,736 trips per day after the deduction of existing uses). The intersection with the highest traffic volume is located at Alabama Street and Redlands Boulevard and has a Horizon Year (2040) with project evening peak hour volume of 913 vehicles. The highest Horizon Year (2040) with project average daily traffic volume is 32,100 vehicles at the road segment located on Alabama Street, north of Redlands Boulevard. The 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan) showed that an intersection which has a daily traffic volume of approximately 100,000 vehicles per day would not violate the CO standard. Therefore, as the proposed project would not cause intersection traffic volumes to reach 100,000 vehicles, no CO "hot spot" modeling was performed and no significant long-term air quality impact is anticipated to local air quality with the on-going use of the proposed project.

Local Air Quality Impacts from On-Site Operations

Project-related air emissions from on-site sources such as architectural coatings, landscaping equipment, on-site usage of natural gas appliances as well as the operation of vehicles on-site may have the potential to exceed the State and Federal air quality standards in the project vicinity, even though these pollutant emissions may not be significant enough to create a regional impact to the Air Basin. The nearest sensitive receptors that may be impacted by the proposed project are the residential uses located adjacent to the north, south, east, and west of the project site.

According to SCAQMD LST methodology, LSTs would apply to the operational phase of a project, if the project includes stationary sources, or attracts mobile sources (such as heavy-duty trucks) that may spend long periods queuing and idling at the site; such as industrial warehouse/transfer facilities. The proposed project is a residential project, and does not include such uses. Therefore, due the lack of stationary source emissions, no long-term localized significance threshold analysis is warranted.

Operations-Related Toxic Air Contaminant Impacts

Particulate matter from diesel exhaust is the predominate toxic air contaminant (TAC) in urban areas and based on a statewide average in 2000 was estimated to represent about two-thirds of cancer risk from TACs. Some chemicals in diesel exhaust, such as benzene and formaldehyde have been listed as carcinogens by State Proposition 65 and the Federal Hazardous Air Pollutants program. Due to the low number of vehicles (2,736 trips per day) frequenting the proposed project, and the fact that the project is a residential use and does not attract heavy-duty truck trips, a less than significant toxic air contaminant impact would occur during the on-going operations of the proposed project and no mitigation would be required.

Operations-Related Odor Impacts

The SCAQMD's role is to protect the public's health from air pollution by overseeing and enforcing regulations (SCAQMD 2007a). The SCAQMD's resolution activity for odor compliance is mandated under California Health & Safety Code Section 41700, and falls under SCAQMD Rule 402. This rule on Public Nuisance Regulation 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 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. 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."

Land uses typically considered associated with odors include wastewater treatment facilities, waste-disposal facilities, or agricultural operations. The proposed project does not include one of these uses and would be required to conform to the odor requirements of SCAQMD Rule 402. Therefore, odor-related impacts are considered to be less than significant.

Table 10
Unmitigated Regional Operational Pollutant Emissions[1]

Activity	Pollutant Emissions (pounds/day)					
	VOC	NOx	CO	SO2	PM10	PM2.5
Area Sources[2]	11.21	6.55	36.80	0.04	0.69	0.69
Energy Usage[3]	0.20	1.75	0.80	0.01	0.14	0.14
Mobile Sources[4]	8.25	52.12	99.32	0.35	24.72	6.82
Subtotal Emissions	19.66	60.42	136.91	0.40	25.54	7.64
-specialty trade contractor, nursery wholesale, & single-family dwelling units being removed	-4.07	-2.63	-9.38	-0.03	-1.66	-0.91
Total Emissions	15.59	57.79	127.53	0.37	23.88	6.73
SCAQMD Thresholds	55	55	550	150	150	55
Exceeds Threshold?	no	Yes	no	no	no	no

Notes:

(1) Source: CalEEMod Version 2016.3.2.

(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.

Table 11
Mitigated Regional Operational Pollutant Emissions[1]

Activity	Pollutant Emissions (pounds/day)					
	VOC	NOx	CO	SO2	PM10	PM2.5
Area Sources[2]	11.21	6.55	36.80	0.04	0.69	0.69
Energy Usage[3]	0.20	1.75	0.80	0.01	0.14	0.14
Mobile Sources[4]	6.93	40.80	63.06	0.21	14.06	3.88
Subtotal Emissions	18.35	49.09	100.65	0.27	14.88	4.71
-specialty trade contractor, nursery wholesale, & single-family dwelling units being removed	-4.07	-2.63	-9.38	-0.03	-1.66	-0.91
Total Emissions	14.27	46.46	91.27	0.24	13.22	3.80
SCAQMD Thresholds	55	55	550	150	150	55
Exceeds Threshold?	no	no	no	no	no	no

Notes:
(1) Source: CalEEMod Version 2016.3.2.

(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.

8. 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.

METHODOLOGY

The CalEEMod Version 2016.3.2 was used to calculate the GHG emissions from all phases of the proposed project. The project's emissions were initially compared to the tier 3 SCAQMD draft screening threshold of 3,000 metric tons CO2e per year for all land uses and then, if the tier 3 screening threshold was exceeded, the emissions were then compared to the tier 4 SCAQMD 2020 Target Service Population Threshold of 4.8 MTCO2e/SP/year.

The service population was estimated to be 1,178 future residents (default population from CalEEMod).

As discussed previously, City of Redlands issued a Hearing Draft of the City of Redlands Climate Action Plan (CAP) in July 2017. The CAP states that the City of Redlands has GHG emissions targets of: 6.1 MTCO2e/capita/year for the year 2015, 6.0 MTCO2e/capita/year for the year 2030, and 5.0 MTCO2e/capita/year for the year 2035. As the CAP's year 2035 GHG emissions target is the most stringent, and the closest in value to the SCAQMD Target Service Population emissions of 4.8 MTCO2e/year for the year 2020 (project buildout year), the emissions were also compared to the year 2035 CAP per capita emissions target.

The CalEEMod Annual Output for year 2020 is available in Appendix C. Each source of GHG emissions is described in greater detail below.

Area Sources

Area sources include emissions from consumer products, landscape equipment and architectural coatings. In order to account for SCAQMD Rule 445, no wood burning stoves or fireplaces will be included. 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.

Mobile Sources

Mobile sources include emissions from the additional vehicle miles generated from the proposed project. The vehicle trips associated with the proposed project have been analyzed by inputting the project-generated vehicular trips from the Traffic Impact Analysis into the CalEEMod Model. The program then applies the emission factors for each trip which is provided by the EMFAC2014 model to determine the vehicular traffic pollutant emissions. The CalEEMod default trip lengths were used in this analysis. See Section VII for details.

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 values were used in the analysis.

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. The CalEEMod default values were used in the analysis.

Construction

The construction-related GHG emissions were also included in the analysis and were based on a 30 year amortization rate as recommended in the SCAQMD GHG Working Group meeting on November 19, 2009. The construction-related GHG emissions were calculated by CalEEMod and detailed above in Section VI.

Sequestration

The analysis includes reduction of GHG emissions from the project design feature calling for the planting of 230 new trees. The California Air Pollution Control Officers Association (CAPCOA) states that trees sequester carbon dioxide over 20 years of their life, after that, sequestration is nominal and outweighed by tree maintenance-related emissions. The total sequestration value given in the Annual CalEEMod output (see Appendix C) was divided by 20 years to yield an annual value, which was then subtracted from the project's emissions.

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 12 and the CalEEMod model run for the proposed project is provided in Appendix C. As stated previously, eight single-family detached residential dwelling units, a 4,000 square foot specialty trade contractor, and a 1.2 acre nursery wholesale are to be removed from the project site and the reductions in operational emissions from the elimination of these uses are also included in Table 12.

Table 12 shows that the subtotal for the proposed project's emissions (prior to the elimination of the existing uses) would be 6,511.63 $MTCO_2e$ per year. The project's total emissions, after the operational emissions associated with the existing uses are deducted, would be 5,664.05 $MTCO_2e$ per year, resulting in GHG emission of 4.81 $MTCO_2e$/SP/year. According to the thresholds of significance established above in Section V above, a cumulative global climate change impact could occur if the GHG emissions created from the on-going operations would exceed the SCAQMD tier 3 draft threshold of 3,000 metric tons CO2e per year for all land uses and the SCAQMD tier 4 2020 Target Service Population threshold of 4.8 MTCO2e/SP/year for projects. The project's emissions would not exceed the City CAP's year 2035 emissions target of 5.0 MTCO2e/capita/year. However, as the proposed project's emissions would exceed the more conservative, SCAQMD Target Service Population threshold of 4.8 MTCO2e/SP/year for projects, incorporation of mitigation measures 2-4 (already required to reduce the project's criteria pollutant emissions; see Sections VII and X of this report) will also reduce the project's GHG emissions.

The data provided in Table 13 shows that the project's mitigated emissions, after the operational emissions associated with the existing uses are deducted, would be reduced to 3,646.91 $MTCO_2e$ per year, resulting in GHG emissions of 3.1 MTCO2e/SP/year. As shown in Table 13, with incorporation of mitigation measures 2 through 4, sequestration from the planting of ~230 new trees, and incorporation of the CAPCOA-based mobile land use reduction measures LUT-1 Increased Density, LUT-4 Improve Destination Accessibility, LUT-5 Increase Transit Accessibility, and SDT-1 Improve Pedestrian Network (please see notes in the CalEEMod output in Appendix C), the project's emissions would no longer exceed the tier 4 SCAQMD 2020 Target Service Population Threshold of 4.8 MTCO2e/SP/year. Therefore, with incorporation of mitigation, the project's GHG emissions are considered to be less than significant.

GREENHOUSE GAS PLAN CONSISTENCY

The proposed project could have the potential to conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases. The applicable plan for the proposed project is the City of Redlands Climate Action Plan (CAP). The CAP's GHG emission targets and goals are based on meeting the goals in EO B-30-15 and SB 32 and following the CAP guidelines established in the CARB 2017 Scoping Plan. The CAP includes emissions targets of 6.0 MTCO2e per capita per year for 2030 and 5.0 MTCO2e per capita per year for 2035.

Even without any mitigation, the project's emissions meet the City's CAP emissions target 5.0 MTCO2e per capita per year for 2035. Therefore, the project will not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

At a mitigated level of 3.1 $MTCO_2e$/SP/year, the project's GHG emissions do not exceed the tier 4 SCAQMD 2020 Target Service Population Threshold of 4.8 MTCO2e/SP/year and is in compliance with the reduction goals of the City of Redlands CAP, AB-32 and SB-32. Furthermore, the project will comply with applicable Green Building Standards and City of Redlands' policies regarding sustainability (as dictated by the City's General Plan and Climate Action Plan). Impacts are considered to be less than significant.

Table 12
Unmitigated Project-Related Greenhouse Gas Emissions[1]

Category	Greenhouse Gas Emissions (Metric Tons/Year)					
	Bio-CO2	NonBio-CO_2	CO_2	CH_4	N_2O	CO_2e
Area Sources[2]	0.00	96.00	96.00	0.01	0.00	96.70
Energy Usage[3]	0.00	1,108.53	1,108.53	0.04	0.01	1,113.37
Mobile Sources[4]	0.00	4,908.73	4,908.73	0.27	0.00	4,915.37
Waste[5]	55.43	0.00	55.43	3.28	0.00	137.33
Water[6]	8.79	176.75	185.54	0.91	0.02	215.10
Construction[7]	0.00	41.79	41.79	0.00	0.00	41.90
Sequestration from trees[8]						-8.14
Subtotal Total Emissions	64.22	6,331.81	6,396.03	4.50	0.04	6,511.63
-specialty trade contractor, nursery wholesale, & single-family dwelling units being removed	-123.12	-539.20	-662.31	-7.33	-0.01	-847.58
Total Emissions	-58.89	5,792.61	5,733.72	-2.83	0.03	5,664.05
SCAQMD Draft Screening Threshold						3,000
Exceeds Threshold?						Yes
2020 Target Service Population Threshold 4.8 MTCO2e/SP/year for projects						4.81
City of Redlands Year 2035 GHG Emissions Target of 5.0 MTCO2e/capita/year						
Exceeds Any Population Threshold?						Yes

Notes:

(1) Source: CalEEMod Version 2016.3.2

(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.

(7) Construction GHG emissions based on a 30 year amortization rate.

(8) CO2 sequestration from the planting of at least 230 trees on site (162.84 MTCO2e/20 [for years of active growth, per SCAQMD methodology])

Table 13
Mitigated Project-Related Greenhouse Gas Emissions[1]

Category	Greenhouse Gas Emissions (Metric Tons/Year)					
	Bio-CO2	NonBio-CO_2	CO_2	CH_4	N_2O	CO_2e
Area Sources[2]	0.00	96.00	96.00	0.01	0.00	96.70
Energy Usage[3]	0.00	1,108.53	1,108.53	0.04	0.01	1,113.37
Mobile Sources[4]	0.00	3,026.90	3,026.90	0.20	0.00	3,031.84
Waste[5]	13.86	0.00	13.86	0.82	0.00	34.33
Water[6]	7.03	153.76	160.79	0.73	0.02	184.48
Construction[7]	0.00	41.79	41.79	0.00	0.00	41.90
Sequestration from trees[8]						-8.14
Subtotal Total Emissions	20.89	4,426.99	4,447.88	1.80	0.03	4,494.48
-specialty trade contractor, nursery wholesale, & single-family dwelling units being removed	-123.12	-539.20	-662.31	-7.33	-0.01	-847.58
Total Emissions	-102.23	3,887.79	3,785.56	-5.53	0.03	3,646.91
SCAQMD Draft Screening Threshold						3,000
Exceeds Threshold?						Yes
2020 Target Service Population Threshold 4.8 MTCO2e/SP/year for projects						3.10
City of Redlands Year 2035 GHG Emissions Target of 5.0 MTCO2e/capita/year						
Exceeds Any Population Threshold?						No

Notes:
(1) Source: CalEEMod Version 2016.3.2

(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.

9. 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). The regional plan that applies to the proposed project includes the SCAQMD Air Quality Management Plan (AQMP). Therefore, this section discusses any potential inconsistencies of the proposed project with the AQMP.

The purpose of this discussion is to set forth the issues regarding consistency with the assumptions and objectives of the AQMP and discuss whether the proposed project would interfere with the region's ability to comply with Federal and State air quality standards. If the decision-makers determine that the proposed project is inconsistent, the lead agency may consider project modifications or inclusion of mitigation to eliminate the inconsistency.

The SCAQMD CEQA Handbook states that "New or amended General Plan Elements (including land use zoning and density amendments), Specific Plans, and significant projects must be analyzed for consistency with the AQMP." Strict consistency with all aspects of the plan is usually not required A proposed project should be considered to be consistent with the AQMP if it furthers one or more policies and does not obstruct other policies. The SCAQMD CEQA Handbook identifies two key indicators of consistency:

(1) Whether the project will result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.
(2) Whether the project will exceed the assumptions in the AQMP in 2016 or increments based on the year of project buildout and phase.

Both of these criteria are evaluated in the following sections.

CRITERIA 1 – INCREASE IN THE FREQUENCY OR SEVERITY OF VIOLATIONS

Based on the air quality modeling analysis contained in this Air Analysis, with incorporation of mitigation, short-term construction impacts will not result in significant impacts based on the SCAQMD regional and local thresholds of significance. This Air Analysis also found that, with incorporation of mitigation, long-term operations impacts will not result in significant impacts based on the SCAQMD local and regional thresholds of significance.

Therefore, with the incorporation of mitigation, the proposed project is not projected to contribute to the exceedance of any air pollutant concentration standards and is found to be consistent with the AQMP for the first criterion.

CRITERIA 2 – EXCEED ASSUMPTIONS IN THE AQMP?

Consistency with the AQMP assumptions is determined by performing an analysis of the proposed project with the assumptions in the AQMP. The emphasis of this criterion is to ensure that the analyses conducted for the proposed project are based on the same forecasts as the AQMP. The 2016-2040 Regional Transportation/Sustainable Communities Strategy prepared by SCAG (2016), includes chapters on: the challenges in a changing region, creating a plan for our future, and the road to greater mobility and sustainable growth. These chapters currently respond directly to federal and state requirements placed on SCAG. Local governments are required to use these as the basis of their plans for purposes of consistency with applicable regional plans under CEQA. For this project, the City of Redlands General Plan 2035 defines the assumptions that are represented in the AQMP.

The project site is currently designated as Medium Density Residential (up to 15 dwelling units per acre) in the City's General Plan 2035 Land Use Plan. The proposed project involves the development of the site with 412 multi-family (low-rise) residential dwelling units; therefore, the project has increased the land use density to 21.75 dwelling units/acre, which would exceed the density allowance of the current land use designation. However, the project includes a General Plan Amendment (GPA) to change the land use from Medium Density Residential to High Density Residential, which will allow up to 27 dwelling units per acre. Therefore, as the proposed project is a residential project and the proposed land use would be similar in intensity to the existing land use, the project would not result in an inconsistency with the land use designation, is not anticipated to exceed the AQMP assumptions for the project site, and would be consistent with the AQMP for the second criterion.

Based on the above, the proposed project will not result in an inconsistency with the SCAQMD AQMP. Therefore, a less than significant impact will occur.

10. MITIGATION MEASURES

CONSTRUCTION MEASURES

The project is required to comply with SCAQMD Rule 403 - Fugitive Dust.

Mitigation Measure 1. Architectural coatings applied to project buildings are to be limited to 30 grams per liter VOC content.

OPERATIONAL MEASURES

Mitigation Measure 2. The project applicant shall require that: all faucets, toilets and showers installed in the proposed structures utilize low-flow fixtures that would reduce indoor water demand by 20% per CalGreen Standards, water-efficient landscaping practices are employed on-site.

Mitigation Measure 3. The project applicant shall require recycling programs that reduces waste to landfills by a minimum of 50 percent (up to 75% by 2020 per AB 341).

Mitigation Measure 4. The project applicant shall provide sidewalks on-site and connecting off-site.

11. 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

2008 ARB Recommended Interim Risk Management Policy for Inhalation-Based Residential Cancer Risk – Frequently Asked Questions

2008 Climate Change Scoping Plan, a framework for change.

2011 Supplement to the AB 32 Scoping Plan Functional Equivalent Document

2013 Almanac of Emissions and Air Quality. Source: https://www.arb.ca.gov/aqd/almanac/almanac13/almanac13.htm

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.

2018 Historical Air Quality, Top 4 Summary

City of Redlands

2011 Community Sustainability Plan. March.

2017 City of Redlands Climate Action Plan Hearing Draft. April 28.

2017 City of Redlands General Plan 2035. December 5.

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

Intergovernmental Panel on Climate Change (IPCC)

2014 IPCC Fifth Assessment Report, Climate Change 2014: Synthesis Report

Kunzman Associates, Inc.

2018 SD Homes Redlands Apartments Traffic Impact Analysis. September 9.

Office of Environmental Health Hazard Assessment

2015 Air Toxics Hot Spots Program Risk Assessment Guidelines

South Coast Air Quality Management District

1993 CEQA Air Quality Handbook

2005 Rule 403 Fugitive Dust

2007 2007 Air Quality Management Plan

2008 Final Localized Significance Threshold Methodology, Revised

2012 Final 2012 Air Quality Management Plan

2016 2016 Air Quality Management Plan

Southern California Association of Governments

2012 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy

U.S. Environmental Protection Agency (EPA)

2017 Understanding Global Warming Potentials (Source: https://www.epa.gov/ghgemissions/understanding-global-warming-potentials)

U.S. Geological Survey

2011 Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California

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

TERMS	DEFINITIONS
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
LST	Localized Significant Thresholds
$MTCO_2e$	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
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SSAB	Salton Sea Air Basin
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

7221b SD Homes Redlands Apartments

San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	7.75	Acre	7.75	337,590.00	0
Parking Lot	589.00	Space	5.30	235,600.00	0
Unenclosed Parking Structure	130.00	Space	1.17	52,000.00	0
Health Club	14.66	1000sqft	0.34	14,660.00	0
Apartments Low Rise	412.00	Dwelling Unit	4.38	412,000.00	1178

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

7221b SD Homes Redlands Apartments - San Bernardino-South Coast County, Summer

Project Characteristics -

Land Use - ~18.94 net acres w/ 412 multi-family DU (res bldg footprint = ~190,909 sf=4.38 acres), 14,662 sf clubhouse, 589 open parking spcs, 130 garage prkng spcs, & rmdr ~7.75 acres landscaping.

Construction Phase - Construction anticipated to begin 4/9/2019 and be completed in April 2020.

Off-road Equipment - CalEEMod default construction timing for the Building Construction phase decreased by ~25%; therefore, construction equipment increased by ~25%.

Demolition - Demolition of multiple existing single-family houses and various industrial sheds totaling ~19,000 square feet.

Grading - Site anticipated to include ~65,000 CY fill - ~5,900 CY cut = ~59,100 CY import.

Architectural Coating - SCAQMD Rule 1113 limits architectural coatings to 50 g/L VOC. Mitigated to 30 g/L VOC for buildings & 100g/L VOC for parking lot striping.

Vehicle Trips - Per TIA, 7.32 trips per DU per weekday. From 10th Ed ITE Sat 8.14 trips/DU, Sun 6.28 trips/DU. On-site clubhouse (health club), no additional vehicle trips.

Woodstoves - SCAQMD Rule 445 prohibits the installation of wood burning devices in new developments.

Sequestration - Per project applicant, approximatley 230 new trees to be planted.

Construction Off-road Equipment Mitigation - Project to use Tier 3 engines or better.

Mobile Land Use Mitigation - Site is ~0.16 miles northwest of Omnitrans Rte 9 stop Barton at Alabama & ~1.52 miles west of downtown Redlands. 412 DU/18.94 acres = 21.75 DU/ac. Sidewalks provided on/off-site.

Water Mitigation - 20% reduction in indoor water use per Cal Green Standards. Water-efficent irrigation systems per City requirements.

Waste Mitigation - AB 341 requires each jurisdiction in CA to divert at least 75% of their waste away from landfills by 2020.

Area Coating - Per SCAQMD Rule 1113 paints limited to 50g/L VOC content for buildings

Energy Mitigation -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	30.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	30.00
tblArchitecturalCoating	EF_Residential_Exterior	50.00	30.00

tblArchitecturalCoating	EF_Residential_Interior	50.00	30.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	100	50
tblAreaCoating	Area_EF_Nonresidential_Interior	100	50
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	300.00	224.00
tblConstructionPhase	NumDays	20.00	30.00
tblFireplaces	NumberGas	350.20	370.80
tblFireplaces	NumberWood	20.60	0.00
tblGrading	MaterialImported	0.00	59,100.00
tblLandUse	LotAcreage	25.75	4.38
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblSequestration	NumberOfNewTrees	0.00	230.00
tblVehicleTrips	HO_TTP	40.60	41.00
tblVehicleTrips	HS_TTP	19.20	19.00
tblVehicleTrips	HW_TTP	40.20	40.00
tblVehicleTrips	ST_TR	7.16	8.14
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	SU_TR	6.07	6.28
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	WD_TR	6.59	7.32
tblVehicleTrips	WD_TR	32.93	0.00
tblWoodstoves	NumberCatalytic	20.60	0.00
tblWoodstoves	NumberNoncatalytic	20.60	0.00

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					
2019	6.6091	119.6334	52.0258	0.2596	13.4297	2.6023	16.0320	4.8712	2.4021	7.2734	0.0000	27,090.5598	27,090.5598	3.0885	0.0000	27,167.7715
2020	67.6890	56.2262	70.7374	0.1760	8.7004	2.3170	11.0175	2.3291	2.1659	4.4950	0.0000	17,547.8414	17,547.8414	2.0076	0.0000	17,598.0322
Maximum	**67.6890**	**119.6334**	**70.7374**	**0.2596**	**13.4297**	**2.6023**	**16.0320**	**4.8712**	**2.4021**	**7.2734**	**0.0000**	**27,090.5598**	**27,090.5598**	**3.0885**	**0.0000**	**27,167.7715**

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					
2019	4.6623	95.0914	52.7376	0.2596	8.0031	1.5191	9.5222	2.6568	1.5095	4.1663	0.0000	27,090.5598	27,090.5598	3.0885	0.0000	27,167.7715
2020	65.0415	47.4073	74.4432	0.1760	8.7004	1.8977	10.5981	2.3291	1.8906	4.2197	0.0000	17,547.8414	17,547.8414	2.0076	0.0000	17,598.0322
Maximum	**65.0415**	**95.0914**	**74.4432**	**0.2596**	**8.7004**	**1.8977**	**10.5981**	**2.6568**	**1.8906**	**4.2197**	**0.0000**	**27,090.5598**	**27,090.5598**	**3.0885**	**0.0000**	**27,167.7715**

	ROG	NOx	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	**6.18**	**18.97**	**-3.60**	**0.00**	**24.52**	**30.54**	**25.62**	**30.75**	**25.57**	**28.74**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	11.2073	6.5461	36.7971	0.0411		0.6851	0.6851		0.6851	0.6851	0.0000	7,913.6011	7,913.6011	0.2106	0.1440	7,961.7659
Energy	0.2037	1.7481	0.7969	0.0111		0.1407	0.1407		0.1407	0.1407		2,221.7558	2,221.7558	0.0426	0.0407	2,234.9586
Mobile	8.2502	51.8277	99.3153	0.3467	24.4188	0.2976	24.7164	6.5349	0.2801	6.8150		35,296.8971	35,296.8971	1.8088		35,342.1161
Total	**19.6612**	**60.1218**	**136.9093**	**0.3988**	**24.4188**	**1.1235**	**25.5422**	**6.5349**	**1.1060**	**7.6409**	**0.0000**	**45,432.2541**	**45,432.2541**	**2.0620**	**0.1847**	**45,538.8406**

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	11.2073	6.5461	36.7971	0.0411		0.6851	0.6851		0.6851	0.6851	0.0000	7,913.6011	7,913.6011	0.2106	0.1440	7,961.7659
Energy	0.2037	1.7481	0.7969	0.0111		0.1407	0.1407		0.1407	0.1407		2,221.7558	2,221.7558	0.0426	0.0407	2,234.9586
Mobile	6.9340	40.7953	63.0604	0.2132	13.8736	0.1795	14.0531	3.7128	0.1688	3.8817		21,747.5656	21,747.5656	1.3226		21,780.6296
Total	**18.3450**	**49.0894**	**100.6544**	**0.2654**	**13.8736**	**1.0053**	**14.8789**	**3.7128**	**0.9947**	**4.7075**	**0.0000**	**31,882.9226**	**31,882.9226**	**1.5758**	**0.1847**	**31,977.3541**

	ROG	NOx	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	**6.69**	**18.35**	**26.48**	**33.47**	**43.18**	**10.52**	**41.75**	**43.18**	**10.06**	**38.39**	**0.00**	**29.82**	**29.82**	**23.58**	**0.00**	**29.78**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/9/2019	5/6/2019	5	20	
2	Grading	Grading	5/7/2019	6/17/2019	5	30	
3	Building Construction	Building Construction	6/18/2019	4/25/2020	5	224	
4	Paving	Paving	3/19/2020	4/15/2020	5	20	
5	Architectural Coating	Architectural Coating	3/20/2020	4/30/2020	5	30	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 14.22

Residential Indoor: 834,300; Residential Outdoor: 278,100; Non-Residential Indoor: 21,990; Non-Residential Outdoor: 7,330; Striped Parking Area: 37,511 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	4	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	4	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	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
Demolition	6	15.00	0.00	86.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	7,388.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	11	565.00	149.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	113.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2019

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					0.9351	0.0000	0.9351	0.1416	0.0000	0.1416			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697		3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**0.9351**	**1.7949**	**2.7300**	**0.1416**	**1.6697**	**1.8113**		**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

3.2 Demolition - 2019

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	0.0288	1.1356	0.1644	3.4100e-003	0.0753	3.8100e-003	0.0791	0.0206	3.6400e-003	0.0243		361.7388	361.7388	0.0199		362.2356
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	0.0889	0.0592	0.7477	1.7600e-003	0.1677	1.1300e-003	0.1688	0.0445	1.0400e-003	0.0455		174.9624	174.9624	5.8700e-003		175.1091
Total	**0.1177**	**1.1947**	**0.9121**	**5.1700e-003**	**0.2429**	**4.9400e-003**	**0.2479**	**0.0651**	**4.6800e-003**	**0.0698**		**536.7012**	**536.7012**	**0.0257**		**537.3446**

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					0.3647	0.0000	0.3647	0.0552	0.0000	0.0552			0.0000			0.0000
Off-Road	0.9246	18.3130	24.6739	0.0388		0.8627	0.8627		0.8627	0.8627	0.0000	3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**0.9246**	**18.3130**	**24.6739**	**0.0388**	**0.3647**	**0.8627**	**1.2274**	**0.0552**	**0.8627**	**0.9179**	**0.0000**	**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

3.2 Demolition - 2019

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	0.0288	1.1356	0.1644	3.4100e-003	0.0753	3.8100e-003	0.0791	0.0206	3.6400e-003	0.0243		361.7388	361.7388	0.0199		362.2356
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	0.0889	0.0592	0.7477	1.7600e-003	0.1677	1.1300e-003	0.1688	0.0445	1.0400e-003	0.0455		174.9624	174.9624	5.8700e-003		175.1091
Total	**0.1177**	**1.1947**	**0.9121**	**5.1700e-003**	**0.2429**	**4.9400e-003**	**0.2479**	**0.0651**	**4.6800e-003**	**0.0698**		**536.7012**	**536.7012**	**0.0257**		**537.3446**

3.3 Grading - 2019

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					8.8961	0.0000	8.8961	3.6302	0.0000	3.6302			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920		6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**8.8961**	**2.3827**	**11.2788**	**3.6302**	**2.1920**	**5.8223**		**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

3.3 Grading - 2019

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	1.6488	65.0343	9.4145	0.1953	4.3100	0.2182	4.5282	1.1817	0.2087	1.3904		20,717.2571	20,717.2571	1.1380		20,745.7073
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	0.1186	0.0789	0.9970	2.3400e-003	0.2236	1.5000e-003	0.2251	0.0593	1.3800e-003	0.0607		233.2832	233.2832	7.8200e-003		233.4787
Total	**1.7674**	**65.1132**	**10.4115**	**0.1976**	**4.5336**	**0.2197**	**4.7532**	**1.2410**	**0.2101**	**1.4511**		**20,950.5403**	**20,950.5403**	**1.1458**		**20,979.1861**

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					3.4695	0.0000	3.4695	1.4158	0.0000	1.4158			0.0000			0.0000
Off-Road	1.5231	29.9782	36.7226	0.0620		1.2994	1.2994		1.2994	1.2994	0.0000	6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**1.5231**	**29.9782**	**36.7226**	**0.0620**	**3.4695**	**1.2994**	**4.7689**	**1.4158**	**1.2994**	**2.7152**	**0.0000**	**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

3.3 Grading - 2019

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	1.6488	65.0343	9.4145	0.1953	4.3100	0.2182	4.5282	1.1817	0.2087	1.3904		20,717.2571	20,717.2571	1.1380		20,745.7073
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	0.1186	0.0789	0.9970	2.3400e-003	0.2236	1.5000e-003	0.2251	0.0593	1.3800e-003	0.0607		233.2832	233.2832	7.8200e-003		233.4787
Total	**1.7674**	**65.1132**	**10.4115**	**0.1976**	**4.5336**	**0.2197**	**4.7532**	**1.2410**	**0.2101**	**1.4511**		**20,950.5403**	**20,950.5403**	**1.1458**		**20,979.1861**

3.4 Building Construction - 2019

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	2.7248	24.5523	20.3728	0.0312		1.5371	1.5371		1.4401	1.4401		3,011.9997	3,011.9997	0.7644		3,031.1084
Total	**2.7248**	**24.5523**	**20.3728**	**0.0312**		**1.5371**	**1.5371**		**1.4401**	**1.4401**		**3,011.9997**	**3,011.9997**	**0.7644**		**3,031.1084**

3.4 Building Construction - 2019

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	0.5344	17.1569	3.4888	0.0407	0.9543	0.1073	1.0616	0.2748	0.1027	0.3774		4,291.9109	4,291.9109	0.2902		4,299.1662
Worker	3.3498	2.2281	28.1641	0.0662	6.3154	0.0425	6.3578	1.6749	0.0391	1.7140		6,590.2499	6,590.2499	0.2210		6,595.7743
Total	**3.8843**	**19.3851**	**31.6529**	**0.1070**	**7.2697**	**0.1498**	**7.4195**	**1.9497**	**0.1418**	**2.0914**		**10,882.1608**	**10,882.1608**	**0.5112**		**10,894.9405**

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	0.7780	16.6039	21.0847	0.0312		1.0702	1.0702		1.0702	1.0702	0.0000	3,011.9997	3,011.9997	0.7644		3,031.1084
Total	**0.7780**	**16.6039**	**21.0847**	**0.0312**		**1.0702**	**1.0702**		**1.0702**	**1.0702**	**0.0000**	**3,011.9997**	**3,011.9997**	**0.7644**		**3,031.1084**

3.4 Building Construction - 2019

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	0.5344	17.1569	3.4888	0.0407	0.9543	0.1073	1.0616	0.2748	0.1027	0.3774		4,291.9109	4,291.9109	0.2902		4,299.1662
Worker	3.3498	2.2281	28.1641	0.0662	6.3154	0.0425	6.3578	1.6749	0.0391	1.7140		6,590.2499	6,590.2499	0.2210		6,595.7743
Total	**3.8843**	**19.3851**	**31.6529**	**0.1070**	**7.2697**	**0.1498**	**7.4195**	**1.9497**	**0.1418**	**2.0914**		**10,882.1608**	**10,882.1608**	**0.5112**		**10,894.9405**

3.4 Building Construction - 2020

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	2.4472	22.3255	20.0235	0.0312		1.3302	1.3302		1.2464	1.2464		2,964.2663	2,964.2663	0.7559		2,983.1625
Total	**2.4472**	**22.3255**	**20.0235**	**0.0312**		**1.3302**	**1.3302**		**1.2464**	**1.2464**		**2,964.2663**	**2,964.2663**	**0.7559**		**2,983.1625**

3.4 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.4523	15.7238	3.0644	0.0404	0.9543	0.0724	1.0267	0.2748	0.0692	0.3440		4,262.9107	4,262.9107	0.2769		4,269.8329
Worker	3.0837	1.9791	25.4096	0.0641	6.3154	0.0414	6.3568	1.6749	0.0381	1.7130		6,384.9753	6,384.9753	0.1949		6,389.8483
Total	**3.5360**	**17.7029**	**28.4739**	**0.1046**	**7.2697**	**0.1137**	**7.3834**	**1.9497**	**0.1073**	**2.0570**		**10,647.8860**	**10,647.8860**	**0.4718**		**10,659.6811**

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	0.7780	16.6039	21.0847	0.0312		1.0702	1.0702		1.0702	1.0702	0.0000	2,964.2663	2,964.2663	0.7559		2,983.1625
Total	**0.7780**	**16.6039**	**21.0847**	**0.0312**		**1.0702**	**1.0702**		**1.0702**	**1.0702**	**0.0000**	**2,964.2663**	**2,964.2663**	**0.7559**		**2,983.1625**

3.4 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.4523	15.7238	3.0644	0.0404	0.9543	0.0724	1.0267	0.2748	0.0692	0.3440		4,262.9107	4,262.9107	0.2769		4,269.8329
Worker	3.0837	1.9791	25.4096	0.0641	6.3154	0.0414	6.3568	1.6749	0.0381	1.7130		6,384.9753	6,384.9753	0.1949		6,389.8483
Total	**3.5360**	**17.7029**	**28.4739**	**0.1046**	**7.2697**	**0.1137**	**7.3834**	**1.9497**	**0.1073**	**2.0570**		**10,647.8860**	**10,647.8860**	**0.4718**		**10,659.6811**

3.5 Paving - 2020

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	1.3566	14.0656	14.6521	0.0228		0.7528	0.7528		0.6926	0.6926		2,207.7334	2,207.7334	0.7140		2,225.5841
Paving	0.6943					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.0509**	**14.0656**	**14.6521**	**0.0228**		**0.7528**	**0.7528**		**0.6926**	**0.6926**		**2,207.7334**	**2,207.7334**	**0.7140**		**2,225.5841**

3.5 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0819	0.0525	0.6746	1.7000e-003	0.1677	1.1000e-003	0.1688	0.0445	1.0100e-003	0.0455		169.5126	169.5126	5.1700e-003		169.6420
Total	**0.0819**	**0.0525**	**0.6746**	**1.7000e-003**	**0.1677**	**1.1000e-003**	**0.1688**	**0.0445**	**1.0100e-003**	**0.0455**		**169.5126**	**169.5126**	**5.1700e-003**		**169.6420**

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	0.5609	11.2952	17.2957	0.0228		0.6093	0.6093		0.6093	0.6093	0.0000	2,207.7334	2,207.7334	0.7140		2,225.5841
Paving	0.6943					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2552**	**11.2952**	**17.2957**	**0.0228**		**0.6093**	**0.6093**		**0.6093**	**0.6093**	**0.0000**	**2,207.7334**	**2,207.7334**	**0.7140**		**2,225.5841**

3.5 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0819	0.0525	0.6746	1.7000e-003	0.1677	1.1000e-003	0.1688	0.0445	1.0100e-003	0.0455		169.5126	169.5126	5.1700e-003		169.6420
Total	**0.0819**	**0.0525**	**0.6746**	**1.7000e-003**	**0.1677**	**1.1000e-003**	**0.1688**	**0.0445**	**1.0100e-003**	**0.0455**		**169.5126**	**169.5126**	**5.1700e-003**		**169.6420**

3.6 Architectural Coating - 2020

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	58.7142					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**58.9564**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.6 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.6167	0.3958	5.0819	0.0128	1.2631	8.2800e-003	1.2714	0.3350	7.6200e-003	0.3426		1,276.9951	1,276.9951	0.0390		1,277.9697
Total	**0.6167**	**0.3958**	**5.0819**	**0.0128**	**1.2631**	**8.2800e-003**	**1.2714**	**0.3350**	**7.6200e-003**	**0.3426**		**1,276.9951**	**1,276.9951**	**0.0390**		**1,277.9697**

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	58.7142					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0951	0.0951		0.0951	0.0951	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**58.7736**	**1.3570**	**1.8324**	**2.9700e-003**		**0.0951**	**0.0951**		**0.0951**	**0.0951**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.6 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.6167	0.3958	5.0819	0.0128	1.2631	8.2800e-003	1.2714	0.3350	7.6200e-003	0.3426		1,276.9951	1,276.9951	0.0390		1,277.9697
Total	**0.6167**	**0.3958**	**5.0819**	**0.0128**	**1.2631**	**8.2800e-003**	**1.2714**	**0.3350**	**7.6200e-003**	**0.3426**		**1,276.9951**	**1,276.9951**	**0.0390**		**1,277.9697**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive 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	6.9340	40.7953	63.0604	0.2132	13.8736	0.1795	14.0531	3.7128	0.1688	3.8817		21,747.5656	21,747.5656	1.3226		21,780.6296
Unmitigated	8.2502	51.8277	99.3153	0.3467	24.4188	0.2976	24.7164	6.5349	0.2801	6.8150		35,296.8971	35,296.8971	1.8088		35,342.1161

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	3,015.84	3,353.68	2587.36	10,255,128	5,826,490
Health Club	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	3,015.84	3,353.68	2,587.36	10,255,128	5,826,490

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
Apartments Low Rise	14.70	5.90	8.70	40.00	19.00	41.00	86	11	3
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	52	39	9
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Unenclosed Parking Structure	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.546179	0.037976	0.179086	0.122965	0.018430	0.005460	0.017497	0.061396	0.001337	0.001657	0.006117	0.000817	0.001082
Health Club	0.546179	0.037976	0.179086	0.122965	0.018430	0.005460	0.017497	0.061396	0.001337	0.001657	0.006117	0.000817	0.001082
Other Non-Asphalt Surfaces	0.546179	0.037976	0.179086	0.122965	0.018430	0.005460	0.017497	0.061396	0.001337	0.001657	0.006117	0.000817	0.001082
Parking Lot	0.546179	0.037976	0.179086	0.122965	0.018430	0.005460	0.017497	0.061396	0.001337	0.001657	0.006117	0.000817	0.001082
Unenclosed Parking Structure	0.546179	0.037976	0.179086	0.122965	0.018430	0.005460	0.017497	0.061396	0.001337	0.001657	0.006117	0.000817	0.001082

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.2037	1.7481	0.7969	0.0111		0.1407	0.1407		0.1407	0.1407		2,221.7558	2,221.7558	0.0426	0.0407	2,234.9586
NaturalGas Unmitigated	0.2037	1.7481	0.7969	0.0111		0.1407	0.1407		0.1407	0.1407		2,221.7558	2,221.7558	0.0426	0.0407	2,234.9586

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					
Apartments Low Rise	17580	0.1896	1.6201	0.6894	0.0103		0.1310	0.1310		0.1310	0.1310		2,068.2334	2,068.2334	0.0396	0.0379	2,080.5238
Health Club	1304.94	0.0141	0.1279	0.1075	7.7000e-004		9.7200e-003	9.7200e-003		9.7200e-003	9.7200e-003		153.5225	153.5225	2.9400e-003	2.8100e-003	154.4348
Other Non-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
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking Structure	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		**0.2037**	**1.7481**	**0.7969**	**0.0111**		**0.1407**	**0.1407**		**0.1407**	**0.1407**		**2,221.7558**	**2,221.7558**	**0.0426**	**0.0407**	**2,234.9586**

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					
Apartments Low Rise	17.58	0.1896	1.6201	0.6894	0.0103		0.1310	0.1310		0.1310	0.1310		2,068.2334	2,068.2334	0.0396	0.0379	2,080.5238
Health Club	1.30494	0.0141	0.1279	0.1075	7.7000e-004		9.7200e-003	9.7200e-003		9.7200e-003	9.7200e-003		153.5225	153.5225	2.9400e-003	2.8100e-003	154.4348
Other Non-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
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking Structure	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		**0.2037**	**1.7481**	**0.7969**	**0.0111**		**0.1407**	**0.1407**		**0.1407**	**0.1407**		**2,221.7558**	**2,221.7558**	**0.0426**	**0.0407**	**2,234.9586**

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	11.2073	6.5461	36.7971	0.0411		0.6851	0.6851		0.6851	0.6851	0.0000	7,913.6011	7,913.6011	0.2106	0.1440	7,961.7659
Unmitigated	11.2073	6.5461	36.7971	0.0411		0.6851	0.6851		0.6851	0.6851	0.0000	7,913.6011	7,913.6011	0.2106	0.1440	7,961.7659

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	0.7726					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.6693					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.7198	6.1509	2.6174	0.0393		0.4973	0.4973		0.4973	0.4973	0.0000	7,852.2353	7,852.2353	0.1505	0.1440	7,898.8972
Landscaping	1.0457	0.3951	34.1797	1.8000e-003		0.1878	0.1878		0.1878	0.1878		61.3658	61.3658	0.0601		62.8687
Total	**11.2073**	**6.5461**	**36.7971**	**0.0411**		**0.6851**	**0.6851**		**0.6851**	**0.6851**	**0.0000**	**7,913.6011**	**7,913.6011**	**0.2106**	**0.1440**	**7,961.7659**

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	0.7726					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.6693					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.7198	6.1509	2.6174	0.0393		0.4973	0.4973		0.4973	0.4973	0.0000	7,852.2353	7,852.2353	0.1505	0.1440	7,898.8972
Landscaping	1.0457	0.3951	34.1797	1.8000e-003		0.1878	0.1878		0.1878	0.1878		61.3658	61.3658	0.0601		62.8687
Total	**11.2073**	**6.5461**	**36.7971**	**0.0411**		**0.6851**	**0.6851**		**0.6851**	**0.6851**	**0.0000**	**7,913.6011**	**7,913.6011**	**0.2106**	**0.1440**	**7,961.7659**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

7221b SD Homes Redlands Apartments

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	7.75	Acre	7.75	337,590.00	0
Parking Lot	589.00	Space	5.30	235,600.00	0
Unenclosed Parking Structure	130.00	Space	1.17	52,000.00	0
Health Club	14.66	1000sqft	0.34	14,660.00	0
Apartments Low Rise	412.00	Dwelling Unit	4.38	412,000.00	1178

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

7221b SD Homes Redlands Apartments - San Bernardino-South Coast County, Winter

Project Characteristics -

Land Use - ~18.94 net acres w/ 412 multi-family DU (res bldg footprint = ~190,909 sf=4.38 acres), 14,662 sf clubhouse, 589 open parking spcs, 130 garage prkng spcs, & rmdr ~7.75 acres landscaping.

Construction Phase - Construction anticipated to begin 4/9/2019 and be completed in April 2020.

Off-road Equipment - CalEEMod default construction timing for the Building Construction phase decreased by ~25%; therefore, construction equipment increased by ~25%.

Demolition - Demolition of multiple existing single-family houses and various industrial sheds totaling ~19,000 square feet.

Grading - Site anticipated to include ~65,000 CY fill - ~5,900 CY cut = ~59,100 CY import.

Architectural Coating - SCAQMD Rule 1113 limits architectural coatings to 50 g/L VOC. Mitigated to 30 g/L VOC for buildings & 100g/L VOC for parking lot striping.

Vehicle Trips - Per TIA, 7.32 trips per DU per weekday. From 10th Ed ITE Sat 8.14 trips/DU, Sun 6.28 trips/DU. On-site clubhouse (health club), no additional vehicle trips.

Woodstoves - SCAQMD Rule 445 prohibits the installation of wood burning devices in new developments.

Sequestration - Per project applicant, approximatley 230 new trees to be planted.

Construction Off-road Equipment Mitigation - Project to use Tier 3 engines or better.

Mobile Land Use Mitigation - Site is ~0.16 miles northwest of Omnitrans Rte 9 stop Barton at Alabama & ~1.52 miles west of downtown Redlands. 412 DU/18.94 acres = 21.75 DU/ac. Sidewalks provided on/off-site.

Water Mitigation - 20% reduction in indoor water use per Cal Green Standards. Water-efficent irrigation systems per City requirements.

Waste Mitigation - AB 341 requires each jurisdiction in CA to divert at least 75% of their waste away from landfills by 2020.

Area Coating - Per SCAQMD Rule 1113 paints limited to 50g/L VOC content for buildings

Energy Mitigation -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	30.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	30.00
tblArchitecturalCoating	EF_Residential_Exterior	50.00	30.00

tblArchitecturalCoating	EF_Residential_Interior	50.00	30.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	100	50
tblAreaCoating	Area_EF_Nonresidential_Interior	100	50
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	300.00	224.00
tblConstructionPhase	NumDays	20.00	30.00
tblFireplaces	NumberGas	350.20	370.80
tblFireplaces	NumberWood	20.60	0.00
tblGrading	MaterialImported	0.00	59,100.00
tblLandUse	LotAcreage	25.75	4.38
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblSequestration	NumberOfNewTrees	0.00	230.00
tblVehicleTrips	HO_TTP	40.60	41.00
tblVehicleTrips	HS_TTP	19.20	19.00
tblVehicleTrips	HW_TTP	40.20	40.00
tblVehicleTrips	ST_TR	7.16	8.14
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	SU_TR	6.07	6.28
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	WD_TR	6.59	7.32
tblVehicleTrips	WD_TR	32.93	0.00
tblWoodstoves	NumberCatalytic	20.60	0.00
tblWoodstoves	NumberNoncatalytic	20.60	0.00

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					
2019	6.6305	120.0525	47.5755	0.2543	13.4297	2.6060	16.0357	4.8712	2.4057	7.2769	0.0000	26,531.9728	26,531.9728	3.1839	0.0000	26,611.5708
2020	67.7157	56.2254	65.6735	0.1663	8.7004	2.3180	11.0184	2.3291	2.1668	4.4959	0.0000	16,576.2355	16,576.2355	2.0075	0.0000	16,626.4236
Maximum	**67.7157**	**120.0525**	**65.6735**	**0.2543**	**13.4297**	**2.6060**	**16.0357**	**4.8712**	**2.4057**	**7.2769**	**0.0000**	**26,531.9728**	**26,531.9728**	**3.1839**	**0.0000**	**26,611.5708**

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					
2019	4.6837	95.5105	48.3401	0.2543	8.0031	1.5228	9.5259	2.6568	1.5131	4.1699	0.0000	26,531.9728	26,531.9728	3.1839	0.0000	26,611.5708
2020	65.0682	47.4066	69.3793	0.1663	8.7004	1.8986	10.5990	2.3291	1.8914	4.2205	0.0000	16,576.2355	16,576.2355	2.0075	0.0000	16,626.4236
Maximum	**65.0682**	**95.5105**	**69.3793**	**0.2543**	**8.7004**	**1.8986**	**10.5990**	**2.6568**	**1.8914**	**4.2205**	**0.0000**	**26,531.9728**	**26,531.9728**	**3.1839**	**0.0000**	**26,611.5708**

	ROG	NOx	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	**6.18**	**18.93**	**-3.95**	**0.00**	**24.52**	**30.52**	**25.61**	**30.75**	**25.54**	**28.73**	**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	11.2073	6.5461	36.7971	0.0411		0.6851	0.6851		0.6851	0.6851	0.0000	7,913.6011	7,913.6011	0.2106	0.1440	7,961.7659
Energy	0.2037	1.7481	0.7969	0.0111		0.1407	0.1407		0.1407	0.1407		2,221.7558	2,221.7558	0.0426	0.0407	2,234.9586
Mobile	7.2268	52.1222	87.0655	0.3192	24.4188	0.2999	24.7186	6.5349	0.2823	6.8172		32,542.1203	32,542.1203	1.8243		32,587.7285
Total	**18.6378**	**60.4164**	**124.6595**	**0.3713**	**24.4188**	**1.1257**	**25.5445**	**6.5349**	**1.1081**	**7.6430**	**0.0000**	**42,677.4772**	**42,677.4772**	**2.0775**	**0.1847**	**42,784.4530**

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	11.2073	6.5461	36.7971	0.0411		0.6851	0.6851		0.6851	0.6851	0.0000	7,913.6011	7,913.6011	0.2106	0.1440	7,961.7659
Energy	0.2037	1.7481	0.7969	0.0111		0.1407	0.1407		0.1407	0.1407		2,221.7558	2,221.7558	0.0426	0.0407	2,234.9586
Mobile	5.9895	40.5491	57.5608	0.1957	13.8736	0.1817	14.0553	3.7128	0.1710	3.8838		19,987.6830	19,987.6830	1.3712		20,021.9634
Total	**17.4005**	**48.8432**	**95.1548**	**0.2479**	**13.8736**	**1.0075**	**14.8812**	**3.7128**	**0.9968**	**4.7096**	**0.0000**	**30,123.0399**	**30,123.0399**	**1.6244**	**0.1847**	**30,218.6879**

	ROG	NOx	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	**6.64**	**19.16**	**23.67**	**33.24**	**43.18**	**10.49**	**41.74**	**43.18**	**10.04**	**38.38**	**0.00**	**29.42**	**29.42**	**21.81**	**0.00**	**29.37**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/9/2019	5/6/2019	5	20	
2	Grading	Grading	5/7/2019	6/17/2019	5	30	
3	Building Construction	Building Construction	6/18/2019	4/25/2020	5	224	
4	Paving	Paving	3/19/2020	4/15/2020	5	20	
5	Architectural Coating	Architectural Coating	3/20/2020	4/30/2020	5	30	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 14.22

Residential Indoor: 834,300; Residential Outdoor: 278,100; Non-Residential Indoor: 21,990; Non-Residential Outdoor: 7,330; Striped Parking Area: 37,511 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	4	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	4	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	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
Demolition	6	15.00	0.00	86.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	7,388.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	11	565.00	149.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	113.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2019

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					0.9351	0.0000	0.9351	0.1416	0.0000	0.1416			0.0000			0.0000
Off-Road	3.5134	35.7830	22.0600	0.0388		1.7949	1.7949		1.6697	1.6697		3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**3.5134**	**35.7830**	**22.0600**	**0.0388**	**0.9351**	**1.7949**	**2.7300**	**0.1416**	**1.6697**	**1.8113**		**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

3.2 Demolition - 2019

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	0.0301	1.1428	0.1885	3.3200e-003	0.0753	3.8700e-003	0.0791	0.0206	3.7100e-003	0.0243		352.4046	352.4046	0.0216		352.9435
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	0.0888	0.0623	0.6157	1.5800e-003	0.1677	1.1300e-003	0.1688	0.0445	1.0400e-003	0.0455		156.9571	156.9571	5.1500e-003		157.0858
Total	**0.1189**	**1.2051**	**0.8042**	**4.9000e-003**	**0.2429**	**5.0000e-003**	**0.2479**	**0.0651**	**4.7500e-003**	**0.0698**		**509.3617**	**509.3617**	**0.0267**		**510.0293**

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					0.3647	0.0000	0.3647	0.0552	0.0000	0.0552			0.0000			0.0000
Off-Road	0.9246	18.3130	24.6739	0.0388		0.8627	0.8627		0.8627	0.8627	0.0000	3,816.8994	3,816.8994	1.0618		3,843.4451
Total	**0.9246**	**18.3130**	**24.6739**	**0.0388**	**0.3647**	**0.8627**	**1.2274**	**0.0552**	**0.8627**	**0.9179**	**0.0000**	**3,816.8994**	**3,816.8994**	**1.0618**		**3,843.4451**

3.2 Demolition - 2019

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	0.0301	1.1428	0.1885	3.3200e-003	0.0753	3.8700e-003	0.0791	0.0206	3.7100e-003	0.0243		352.4046	352.4046	0.0216		352.9435
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	0.0888	0.0623	0.6157	1.5800e-003	0.1677	1.1300e-003	0.1688	0.0445	1.0400e-003	0.0455		156.9571	156.9571	5.1500e-003		157.0858
Total	**0.1189**	**1.2051**	**0.8042**	**4.9000e-003**	**0.2429**	**5.0000e-003**	**0.2479**	**0.0651**	**4.7500e-003**	**0.0698**		**509.3617**	**509.3617**	**0.0267**		**510.0293**

3.3 Grading - 2019

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					8.8961	0.0000	8.8961	3.6302	0.0000	3.6302			0.0000			0.0000
Off-Road	4.7389	54.5202	33.3768	0.0620		2.3827	2.3827		2.1920	2.1920		6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**4.7389**	**54.5202**	**33.3768**	**0.0620**	**8.8961**	**2.3827**	**11.2788**	**3.6302**	**2.1920**	**5.8223**		**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

3.3 Grading - 2019

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	1.7233	65.4492	10.7966	0.1902	4.3100	0.2219	4.5319	1.1817	0.2123	1.3940		20,182.6772	20,182.6772	1.2344		20,213.5376
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	0.1184	0.0830	0.8209	2.1000e-003	0.2236	1.5000e-003	0.2251	0.0593	1.3800e-003	0.0607		209.2761	209.2761	6.8700e-003		209.4478
Total	**1.8417**	**65.5323**	**11.6175**	**0.1923**	**4.5336**	**0.2234**	**4.7570**	**1.2410**	**0.2137**	**1.4546**		**20,391.9533**	**20,391.9533**	**1.2413**		**20,422.9854**

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					3.4695	0.0000	3.4695	1.4158	0.0000	1.4158			0.0000			0.0000
Off-Road	1.5231	29.9782	36.7226	0.0620		1.2994	1.2994		1.2994	1.2994	0.0000	6,140.0195	6,140.0195	1.9426		6,188.5854
Total	**1.5231**	**29.9782**	**36.7226**	**0.0620**	**3.4695**	**1.2994**	**4.7689**	**1.4158**	**1.2994**	**2.7152**	**0.0000**	**6,140.0195**	**6,140.0195**	**1.9426**		**6,188.5854**

3.3 Grading - 2019

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	1.7233	65.4492	10.7966	0.1902	4.3100	0.2219	4.5319	1.1817	0.2123	1.3940		20,182.6772	20,182.6772	1.2344		20,213.5376
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	0.1184	0.0830	0.8209	2.1000e-003	0.2236	1.5000e-003	0.2251	0.0593	1.3800e-003	0.0607		209.2761	209.2761	6.8700e-003		209.4478
Total	**1.8417**	**65.5323**	**11.6175**	**0.1923**	**4.5336**	**0.2234**	**4.7570**	**1.2410**	**0.2137**	**1.4546**		**20,391.9533**	**20,391.9533**	**1.2413**		**20,422.9854**

3.4 Building Construction - 2019

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	2.7248	24.5523	20.3728	0.0312		1.5371	1.5371		1.4401	1.4401		3,011.9997	3,011.9997	0.7644		3,031.1084
Total	**2.7248**	**24.5523**	**20.3728**	**0.0312**		**1.5371**	**1.5371**		**1.4401**	**1.4401**		**3,011.9997**	**3,011.9997**	**0.7644**		**3,031.1084**

3.4 Building Construction - 2019

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	0.5612	17.0584	4.0117	0.0392	0.9543	0.1087	1.0631	0.2748	0.1040	0.3788		4,126.5407	4,126.5407	0.3201		4,134.5440
Worker	3.3445	2.3460	23.1910	0.0594	6.3154	0.0425	6.3578	1.6749	0.0391	1.7140		5,912.0502	5,912.0502	0.1940		5,916.8990
Total	**3.9057**	**19.4044**	**27.2027**	**0.0986**	**7.2697**	**0.1512**	**7.4209**	**1.9497**	**0.1431**	**2.0928**		**10,038.5909**	**10,038.5909**	**0.5141**		**10,051.4430**

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	0.7780	16.6039	21.0847	0.0312		1.0702	1.0702		1.0702	1.0702	0.0000	3,011.9997	3,011.9997	0.7644		3,031.1084
Total	**0.7780**	**16.6039**	**21.0847**	**0.0312**		**1.0702**	**1.0702**		**1.0702**	**1.0702**	**0.0000**	**3,011.9997**	**3,011.9997**	**0.7644**		**3,031.1084**

3.4 Building Construction - 2019

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	0.5612	17.0584	4.0117	0.0392	0.9543	0.1087	1.0631	0.2748	0.1040	0.3788		4,126.5407	4,126.5407	0.3201		4,134.5440
Worker	3.3445	2.3460	23.1910	0.0594	6.3154	0.0425	6.3578	1.6749	0.0391	1.7140		5,912.0502	5,912.0502	0.1940		5,916.8990
Total	**3.9057**	**19.4044**	**27.2027**	**0.0986**	**7.2697**	**0.1512**	**7.4209**	**1.9497**	**0.1431**	**2.0928**		**10,038.5909**	**10,038.5909**	**0.5141**		**10,051.4430**

3.4 Building Construction - 2020

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	2.4472	22.3255	20.0235	0.0312		1.3302	1.3302		1.2464	1.2464		2,964.2663	2,964.2663	0.7559		2,983.1625
Total	**2.4472**	**22.3255**	**20.0235**	**0.0312**		**1.3302**	**1.3302**		**1.2464**	**1.2464**		**2,964.2663**	**2,964.2663**	**0.7559**		**2,983.1625**

3.4 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.4771	15.5963	3.5516	0.0389	0.9543	0.0733	1.0276	0.2748	0.0701	0.3449		4,097.5016	4,097.5016	0.3061		4,105.1551
Worker	3.0853	2.0825	20.8837	0.0575	6.3154	0.0414	6.3568	1.6749	0.0381	1.7130		5,727.6863	5,727.6863	0.1710		5,731.9610
Total	**3.5624**	**17.6787**	**24.4354**	**0.0964**	**7.2697**	**0.1147**	**7.3843**	**1.9497**	**0.1082**	**2.0579**		**9,825.1880**	**9,825.1880**	**0.4771**		**9,837.1161**

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	0.7780	16.6039	21.0847	0.0312		1.0702	1.0702		1.0702	1.0702	0.0000	2,964.2663	2,964.2663	0.7559		2,983.1625
Total	**0.7780**	**16.6039**	**21.0847**	**0.0312**		**1.0702**	**1.0702**		**1.0702**	**1.0702**	**0.0000**	**2,964.2663**	**2,964.2663**	**0.7559**		**2,983.1625**

3.4 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.4771	15.5963	3.5516	0.0389	0.9543	0.0733	1.0276	0.2748	0.0701	0.3449		4,097.5016	4,097.5016	0.3061		4,105.1551
Worker	3.0853	2.0825	20.8837	0.0575	6.3154	0.0414	6.3568	1.6749	0.0381	1.7130		5,727.6863	5,727.6863	0.1710		5,731.9610
Total	**3.5624**	**17.6787**	**24.4354**	**0.0964**	**7.2697**	**0.1147**	**7.3843**	**1.9497**	**0.1082**	**2.0579**		**9,825.1880**	**9,825.1880**	**0.4771**		**9,837.1161**

3.5 Paving - 2020

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	1.3566	14.0656	14.6521	0.0228		0.7528	0.7528		0.6926	0.6926		2,207.7334	2,207.7334	0.7140		2,225.5841
Paving	0.6943					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.0509**	**14.0656**	**14.6521**	**0.0228**		**0.7528**	**0.7528**		**0.6926**	**0.6926**		**2,207.7334**	**2,207.7334**	**0.7140**		**2,225.5841**

3.5 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0819	0.0553	0.5544	1.5300e-003	0.1677	1.1000e-003	0.1688	0.0445	1.0100e-003	0.0455		152.0625	152.0625	4.5400e-003		152.1760
Total	**0.0819**	**0.0553**	**0.5544**	**1.5300e-003**	**0.1677**	**1.1000e-003**	**0.1688**	**0.0445**	**1.0100e-003**	**0.0455**		**152.0625**	**152.0625**	**4.5400e-003**		**152.1760**

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	0.5609	11.2952	17.2957	0.0228		0.6093	0.6093		0.6093	0.6093	0.0000	2,207.7334	2,207.7334	0.7140		2,225.5841
Paving	0.6943					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2552**	**11.2952**	**17.2957**	**0.0228**		**0.6093**	**0.6093**		**0.6093**	**0.6093**	**0.0000**	**2,207.7334**	**2,207.7334**	**0.7140**		**2,225.5841**

3.5 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0819	0.0553	0.5544	1.5300e-003	0.1677	1.1000e-003	0.1688	0.0445	1.0100e-003	0.0455		152.0625	152.0625	4.5400e-003		152.1760
Total	**0.0819**	**0.0553**	**0.5544**	**1.5300e-003**	**0.1677**	**1.1000e-003**	**0.1688**	**0.0445**	**1.0100e-003**	**0.0455**		**152.0625**	**152.0625**	**4.5400e-003**		**152.1760**

3.6 Architectural Coating - 2020

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	58.7142					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9928
Total	**58.9564**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.6 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.6171	0.4165	4.1767	0.0115	1.2631	8.2800e-003	1.2714	0.3350	7.6200e-003	0.3426		1,145.5373	1,145.5373	0.0342		1,146.3922
Total	**0.6171**	**0.4165**	**4.1767**	**0.0115**	**1.2631**	**8.2800e-003**	**1.2714**	**0.3350**	**7.6200e-003**	**0.3426**		**1,145.5373**	**1,145.5373**	**0.0342**		**1,146.3922**

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	58.7142					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0951	0.0951		0.0951	0.0951	0.0000	281.4481	281.4481	0.0218		281.9928
Total	**58.7736**	**1.3570**	**1.8324**	**2.9700e-003**		**0.0951**	**0.0951**		**0.0951**	**0.0951**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9928**

3.6 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.6171	0.4165	4.1767	0.0115	1.2631	8.2800e-003	1.2714	0.3350	7.6200e-003	0.3426		1,145.5373	1,145.5373	0.0342		1,146.3922
Total	**0.6171**	**0.4165**	**4.1767**	**0.0115**	**1.2631**	**8.2800e-003**	**1.2714**	**0.3350**	**7.6200e-003**	**0.3426**		**1,145.5373**	**1,145.5373**	**0.0342**		**1,146.3922**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive 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	5.9895	40.5491	57.5608	0.1957	13.8736	0.1817	14.0553	3.7128	0.1710	3.8838		19,987.6830	19,987.6830	1.3712		20,021.9634
Unmitigated	7.2268	52.1222	87.0655	0.3192	24.4188	0.2999	24.7186	6.5349	0.2823	6.8172		32,542.1203	32,542.1203	1.8243		32,587.7285

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	3,015.84	3,353.68	2587.36	10,255,128	5,826,490
Health Club	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	3,015.84	3,353.68	2,587.36	10,255,128	5,826,490

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
Apartments Low Rise	14.70	5.90	8.70	40.00	19.00	41.00	86	11	3
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	52	39	9
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Unenclosed Parking Structure	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.546179	0.037976	0.179086	0.122965	0.018430	0.005460	0.017497	0.061396	0.001337	0.001657	0.006117	0.000817	0.001082
Health Club	0.546179	0.037976	0.179086	0.122965	0.018430	0.005460	0.017497	0.061396	0.001337	0.001657	0.006117	0.000817	0.001082
Other Non-Asphalt Surfaces	0.546179	0.037976	0.179086	0.122965	0.018430	0.005460	0.017497	0.061396	0.001337	0.001657	0.006117	0.000817	0.001082
Parking Lot	0.546179	0.037976	0.179086	0.122965	0.018430	0.005460	0.017497	0.061396	0.001337	0.001657	0.006117	0.000817	0.001082
Unenclosed Parking Structure	0.546179	0.037976	0.179086	0.122965	0.018430	0.005460	0.017497	0.061396	0.001337	0.001657	0.006117	0.000817	0.001082

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.2037	1.7481	0.7969	0.0111		0.1407	0.1407		0.1407	0.1407		2,221.7558	2,221.7558	0.0426	0.0407	2,234.9586
NaturalGas Unmitigated	0.2037	1.7481	0.7969	0.0111		0.1407	0.1407		0.1407	0.1407		2,221.7558	2,221.7558	0.0426	0.0407	2,234.9586

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					
Apartments Low Rise	17580	0.1896	1.6201	0.6894	0.0103		0.1310	0.1310		0.1310	0.1310		2,068.2334	2,068.2334	0.0396	0.0379	2,080.5238
Health Club	1304.94	0.0141	0.1279	0.1075	7.7000e-004		9.7200e-003	9.7200e-003		9.7200e-003	9.7200e-003		153.5225	153.5225	2.9400e-003	2.8100e-003	154.4348
Other Non-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
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking Structure	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		**0.2037**	**1.7481**	**0.7969**	**0.0111**		**0.1407**	**0.1407**		**0.1407**	**0.1407**		**2,221.7558**	**2,221.7558**	**0.0426**	**0.0407**	**2,234.9586**

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					
Apartments Low Rise	17.58	0.1896	1.6201	0.6894	0.0103		0.1310	0.1310		0.1310	0.1310		2,068.2334	2,068.2334	0.0396	0.0379	2,080.5238
Health Club	1.30494	0.0141	0.1279	0.1075	7.7000e-004		9.7200e-003	9.7200e-003		9.7200e-003	9.7200e-003		153.5225	153.5225	2.9400e-003	2.8100e-003	154.4348
Other Non-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
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking Structure	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		**0.2037**	**1.7481**	**0.7969**	**0.0111**		**0.1407**	**0.1407**		**0.1407**	**0.1407**		**2,221.7558**	**2,221.7558**	**0.0426**	**0.0407**	**2,234.9586**

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	11.2073	6.5461	36.7971	0.0411		0.6851	0.6851		0.6851	0.6851	0.0000	7,913.6011	7,913.6011	0.2106	0.1440	7,961.7659
Unmitigated	11.2073	6.5461	36.7971	0.0411		0.6851	0.6851		0.6851	0.6851	0.0000	7,913.6011	7,913.6011	0.2106	0.1440	7,961.7659

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	0.7726					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.6693					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.7198	6.1509	2.6174	0.0393		0.4973	0.4973		0.4973	0.4973	0.0000	7,852.2353	7,852.2353	0.1505	0.1440	7,898.8972
Landscaping	1.0457	0.3951	34.1797	1.8000e-003		0.1878	0.1878		0.1878	0.1878		61.3658	61.3658	0.0601		62.8687
Total	**11.2073**	**6.5461**	**36.7971**	**0.0411**		**0.6851**	**0.6851**		**0.6851**	**0.6851**	**0.0000**	**7,913.6011**	**7,913.6011**	**0.2106**	**0.1440**	**7,961.7659**

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	0.7726					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.6693					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.7198	6.1509	2.6174	0.0393		0.4973	0.4973		0.4973	0.4973	0.0000	7,852.2353	7,852.2353	0.1505	0.1440	7,898.8972
Landscaping	1.0457	0.3951	34.1797	1.8000e-003		0.1878	0.1878		0.1878	0.1878		61.3658	61.3658	0.0601		62.8687
Total	**11.2073**	**6.5461**	**36.7971**	**0.0411**		**0.6851**	**0.6851**		**0.6851**	**0.6851**	**0.0000**	**7,913.6011**	**7,913.6011**	**0.2106**	**0.1440**	**7,961.7659**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

7221b SD Homes Redlands Apartments - OPERATIONAL ANALYSIS ONLY EXISTING USES

San Bernardino-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	4.00	1000sqft	0.09	4,000.00	0
Single Family Housing	8.00	Dwelling Unit	2.60	14,400.00	23
Hardware/Paint Store	52.27	1000sqft	1.20	52,272.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - OPERATIONAL ANALYSIS ONLY - EXISTING USES TO BE REMOVED

Land Use - Exsiting uses to be removed from the site include 8 SFD, 4 TSF specialty trade contractor, & 1.2 acres (52,272 sf) nursery wholesale.

Vehicle Trips - Per TIA, 10.22 trips/TSF/day specialty trade contractor, 19.50 trips/ac/day nursery wholesale (~0.44 trips/TSF/day), & 9.44 trips/DU/day single-family.

Energy Use -

Table Name	Column Name	Default Value	New Value
tblLandUse	LandUseSquareFeet	52,270.00	52,272.00
tblVehicleTrips	ST_TR	1.32	10.22
tblVehicleTrips	ST_TR	82.52	0.44
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	0.68	10.22
tblVehicleTrips	SU_TR	68.65	0.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	6.97	10.22
tblVehicleTrips	WD_TR	51.29	0.44
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

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	3.6841	0.1737	4.7375	0.0104		0.6148	0.6148		0.6148	0.6148	74.9354	145.2007	220.1361	0.2247	5.0900e-003	227.2685
Energy	0.0145	0.1279	0.0818	7.9000e-004		0.0100	0.0100		0.0100	0.0100		158.1863	158.1863	3.0300e-003	2.9000e-003	159.1263
Mobile	0.3763	2.3112	4.5625	0.0148	1.0227	0.0146	1.0373	0.2737	0.0137	0.2875		1,508.1641	1,508.1641	0.0804		1,510.1743
Total	**4.0748**	**2.6128**	**9.3818**	**0.0260**	**1.0227**	**0.6393**	**1.6621**	**0.2737**	**0.6385**	**0.9122**	**74.9354**	**1,811.5512**	**1,886.4865**	**0.3081**	**7.9900e-003**	**1,896.5692**

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	3.6841	0.1737	4.7375	0.0104		0.6148	0.6148		0.6148	0.6148	74.9354	145.2007	220.1361	0.2247	5.0900e-003	227.2685
Energy	0.0145	0.1279	0.0818	7.9000e-004		0.0100	0.0100		0.0100	0.0100		158.1863	158.1863	3.0300e-003	2.9000e-003	159.1263
Mobile	0.3763	2.3112	4.5625	0.0148	1.0227	0.0146	1.0373	0.2737	0.0137	0.2875		1,508.1641	1,508.1641	0.0804		1,510.1743
Total	**4.0748**	**2.6128**	**9.3818**	**0.0260**	**1.0227**	**0.6393**	**1.6621**	**0.2737**	**0.6385**	**0.9122**	**74.9354**	**1,811.5512**	**1,886.4865**	**0.3081**	**7.9900e-003**	**1,896.5692**

	ROG	NOx	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**

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	0.3763	2.3112	4.5625	0.0148	1.0227	0.0146	1.0373	0.2737	0.0137	0.2875		1,508.1641	1,508.1641	0.0804		1,510.1743
Unmitigated	0.3763	2.3112	4.5625	0.0148	1.0227	0.0146	1.0373	0.2737	0.0137	0.2875		1,508.1641	1,508.1641	0.0804		1,510.1743

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	40.88	40.88	40.88	181,028	181,028
Hardware/Paint Store	23.00	23.00	23.00	40,592	40,592
Single Family Housing	75.52	75.52	75.52	258,063	258,063
Total	139.40	139.40	139.40	479,683	479,683

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
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3
Hardware/Paint Store	16.60	8.40	6.90	13.60	67.40	19.00	45	29	26
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.541740	0.038987	0.178620	0.126833	0.019742	0.005671	0.017070	0.060066	0.001326	0.001715	0.006244	0.000823	0.001163
Hardware/Paint Store	0.541740	0.038987	0.178620	0.126833	0.019742	0.005671	0.017070	0.060066	0.001326	0.001715	0.006244	0.000823	0.001163
Single Family Housing	0.541740	0.038987	0.178620	0.126833	0.019742	0.005671	0.017070	0.060066	0.001326	0.001715	0.006244	0.000823	0.001163

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0145	0.1279	0.0818	7.9000e-004		0.0100	0.0100		0.0100	0.0100		158.1863	158.1863	3.0300e-003	2.9000e-003	159.1263
NaturalGas Unmitigated	0.0145	0.1279	0.0818	7.9000e-004		0.0100	0.0100		0.0100	0.0100		158.1863	158.1863	3.0300e-003	2.9000e-003	159.1263

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					
General Light Industry	356.055	3.8400e-003	0.0349	0.0293	2.1000e-004		2.6500e-003	2.6500e-003		2.6500e-003	2.6500e-003		41.8888	41.8888	8.0000e-004	7.7000e-004	42.1377
Hardware/Paint Store	317.928	3.4300e-003	0.0312	0.0262	1.9000e-004		2.3700e-003	2.3700e-003		2.3700e-003	2.3700e-003		37.4033	37.4033	7.2000e-004	6.9000e-004	37.6256
Single Family Housing	670.601	7.2300e-003	0.0618	0.0263	3.9000e-004		5.0000e-003	5.0000e-003		5.0000e-003	5.0000e-003		78.8942	78.8942	1.5100e-003	1.4500e-003	79.3630
Total		**0.0145**	**0.1279**	**0.0818**	**7.9000e-004**		**0.0100**	**0.0100**		**0.0100**	**0.0100**		**158.1863**	**158.1863**	**3.0300e-003**	**2.9100e-003**	**159.1263**

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					
General Light Industry	0.356055	3.8400e-003	0.0349	0.0293	2.1000e-004		2.6500e-003	2.6500e-003		2.6500e-003	2.6500e-003		41.8888	41.8888	8.0000e-004	7.7000e-004	42.1377
Hardware/Paint Store	0.317928	3.4300e-003	0.0312	0.0262	1.9000e-004		2.3700e-003	2.3700e-003		2.3700e-003	2.3700e-003		37.4033	37.4033	7.2000e-004	6.9000e-004	37.6256
Single Family Housing	0.670601	7.2300e-003	0.0618	0.0263	3.9000e-004		5.0000e-003	5.0000e-003		5.0000e-003	5.0000e-003		78.8942	78.8942	1.5100e-003	1.4500e-003	79.3630
Total		**0.0145**	**0.1279**	**0.0818**	**7.9000e-004**		**0.0100**	**0.0100**		**0.0100**	**0.0100**		**158.1863**	**158.1863**	**3.0300e-003**	**2.9100e-003**	**159.1263**

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	3.6841	0.1737	4.7375	0.0104		0.6148	0.6148		0.6148	0.6148	74.9354	145.2007	220.1361	0.2247	5.0900e-003	227.2685
Unmitigated	3.6841	0.1737	4.7375	0.0104		0.6148	0.6148		0.6148	0.6148	74.9354	145.2007	220.1361	0.2247	5.0900e-003	227.2685

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	0.1676					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3993					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	2.0963	0.1660	4.0684	0.0104		0.6111	0.6111		0.6111	0.6111	74.9354	144.0000	218.9354	0.2235	5.0900e-003	226.0378
Landscaping	0.0209	7.7400e-003	0.6691	4.0000e-005		3.6600e-003	3.6600e-003		3.6600e-003	3.6600e-003		1.2007	1.2007	1.2000e-003		1.2307
Total	**3.6841**	**0.1737**	**4.7375**	**0.0104**		**0.6148**	**0.6148**		**0.6148**	**0.6148**	**74.9354**	**145.2007**	**220.1361**	**0.2247**	**5.0900e-003**	**227.2685**

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	0.1676					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3993					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	2.0963	0.1660	4.0684	0.0104		0.6111	0.6111		0.6111	0.6111	74.9354	144.0000	218.9354	0.2235	5.0900e-003	226.0378
Landscaping	0.0209	7.7400e-003	0.6691	4.0000e-005		3.6600e-003	3.6600e-003		3.6600e-003	3.6600e-003		1.2007	1.2007	1.2000e-003		1.2307
Total	**3.6841**	**0.1737**	**4.7375**	**0.0104**		**0.6148**	**0.6148**		**0.6148**	**0.6148**	**74.9354**	**145.2007**	**220.1361**	**0.2247**	**5.0900e-003**	**227.2685**

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 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

7221b SD Homes Redlands Apartments - OPERATIONAL ANALYSIS ONLY EXISTING USES

San Bernardino-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	4.00	1000sqft	0.09	4,000.00	0
Single Family Housing	8.00	Dwelling Unit	2.60	14,400.00	23
Hardware/Paint Store	52.27	1000sqft	1.20	52,272.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - OPERATIONAL ANALYSIS ONLY - EXISTING USES TO BE REMOVED

Land Use - Exsiting uses to be removed from the site include 8 SFD, 4 TSF specialty trade contractor, & 1.2 acres (52,272 sf) nursery wholesale.

Vehicle Trips - Per TIA, 10.22 trips/TSF/day specialty trade contractor, 19.50 trips/ac/day nursery wholesale (~0.44 trips/TSF/day), & 9.44 trips/DU/day single-family.

Energy Use -

Table Name	Column Name	Default Value	New Value
tblLandUse	LandUseSquareFeet	52,270.00	52,272.00
tblVehicleTrips	ST_TR	1.32	10.22
tblVehicleTrips	ST_TR	82.52	0.44
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	0.68	10.22
tblVehicleTrips	SU_TR	68.65	0.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	6.97	10.22
tblVehicleTrips	WD_TR	51.29	0.44
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

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	3.6841	0.1737	4.7375	0.0104		0.6148	0.6148		0.6148	0.6148	74.9354	145.2007	220.1361	0.2247	5.0900e-003	227.2685
Energy	0.0145	0.1279	0.0818	7.9000e-004		0.0100	0.0100		0.0100	0.0100		158.1863	158.1863	3.0300e-003	2.9000e-003	159.1263
Mobile	0.3303	2.3292	3.9994	0.0137	1.0227	0.0147	1.0374	0.2737	0.0139	0.2876		1,389.8823	1,389.8823	0.0807		1,391.8998
Total	**4.0288**	**2.6308**	**8.8187**	**0.0249**	**1.0227**	**0.6395**	**1.6622**	**0.2737**	**0.6387**	**0.9124**	**74.9354**	**1,693.2693**	**1,768.2046**	**0.3084**	**7.9900e-003**	**1,778.2947**

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	3.6841	0.1737	4.7375	0.0104		0.6148	0.6148		0.6148	0.6148	74.9354	145.2007	220.1361	0.2247	5.0900e-003	227.2685
Energy	0.0145	0.1279	0.0818	7.9000e-004		0.0100	0.0100		0.0100	0.0100		158.1863	158.1863	3.0300e-003	2.9000e-003	159.1263
Mobile	0.3303	2.3292	3.9994	0.0137	1.0227	0.0147	1.0374	0.2737	0.0139	0.2876		1,389.8823	1,389.8823	0.0807		1,391.8998
Total	**4.0288**	**2.6308**	**8.8187**	**0.0249**	**1.0227**	**0.6395**	**1.6622**	**0.2737**	**0.6387**	**0.9124**	**74.9354**	**1,693.2693**	**1,768.2046**	**0.3084**	**7.9900e-003**	**1,778.2947**

	ROG	NOx	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**

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	0.3303	2.3292	3.9994	0.0137	1.0227	0.0147	1.0374	0.2737	0.0139	0.2876		1,389.8823	1,389.8823	0.0807		1,391.8998
Unmitigated	0.3303	2.3292	3.9994	0.0137	1.0227	0.0147	1.0374	0.2737	0.0139	0.2876		1,389.8823	1,389.8823	0.0807		1,391.8998

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	40.88	40.88	40.88	181,028	181,028
Hardware/Paint Store	23.00	23.00	23.00	40,592	40,592
Single Family Housing	75.52	75.52	75.52	258,063	258,063
Total	139.40	139.40	139.40	479,683	479,683

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
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3
Hardware/Paint Store	16.60	8.40	6.90	13.60	67.40	19.00	45	29	26
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.541740	0.038987	0.178620	0.126833	0.019742	0.005671	0.017070	0.060066	0.001326	0.001715	0.006244	0.000823	0.001163
Hardware/Paint Store	0.541740	0.038987	0.178620	0.126833	0.019742	0.005671	0.017070	0.060066	0.001326	0.001715	0.006244	0.000823	0.001163
Single Family Housing	0.541740	0.038987	0.178620	0.126833	0.019742	0.005671	0.017070	0.060066	0.001326	0.001715	0.006244	0.000823	0.001163

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0145	0.1279	0.0818	7.9000e-004		0.0100	0.0100		0.0100	0.0100		158.1863	158.1863	3.0300e-003	2.9000e-003	159.1263
NaturalGas Unmitigated	0.0145	0.1279	0.0818	7.9000e-004		0.0100	0.0100		0.0100	0.0100		158.1863	158.1863	3.0300e-003	2.9000e-003	159.1263

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					
General Light Industry	356.055	3.8400e-003	0.0349	0.0293	2.1000e-004		2.6500e-003	2.6500e-003		2.6500e-003	2.6500e-003		41.8888	41.8888	8.0000e-004	7.7000e-004	42.1377
Hardware/Paint Store	317.928	3.4300e-003	0.0312	0.0262	1.9000e-004		2.3700e-003	2.3700e-003		2.3700e-003	2.3700e-003		37.4033	37.4033	7.2000e-004	6.9000e-004	37.6256
Single Family Housing	670.601	7.2300e-003	0.0618	0.0263	3.9000e-004		5.0000e-003	5.0000e-003		5.0000e-003	5.0000e-003		78.8942	78.8942	1.5100e-003	1.4500e-003	79.3630
Total		**0.0145**	**0.1279**	**0.0818**	**7.9000e-004**		**0.0100**	**0.0100**		**0.0100**	**0.0100**		**158.1863**	**158.1863**	**3.0300e-003**	**2.9100e-003**	**159.1263**

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					
General Light Industry	0.356055	3.8400e-003	0.0349	0.0293	2.1000e-004		2.6500e-003	2.6500e-003		2.6500e-003	2.6500e-003		41.8888	41.8888	8.0000e-004	7.7000e-004	42.1377
Hardware/Paint Store	0.317928	3.4300e-003	0.0312	0.0262	1.9000e-004		2.3700e-003	2.3700e-003		2.3700e-003	2.3700e-003		37.4033	37.4033	7.2000e-004	6.9000e-004	37.6256
Single Family Housing	0.670601	7.2300e-003	0.0618	0.0263	3.9000e-004		5.0000e-003	5.0000e-003		5.0000e-003	5.0000e-003		78.8942	78.8942	1.5100e-003	1.4500e-003	79.3630
Total		**0.0145**	**0.1279**	**0.0818**	**7.9000e-004**		**0.0100**	**0.0100**		**0.0100**	**0.0100**		**158.1863**	**158.1863**	**3.0300e-003**	**2.9100e-003**	**159.1263**

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	3.6841	0.1737	4.7375	0.0104		0.6148	0.6148		0.6148	0.6148	74.9354	145.2007	220.1361	0.2247	5.0900e-003	227.2685
Unmitigated	3.6841	0.1737	4.7375	0.0104		0.6148	0.6148		0.6148	0.6148	74.9354	145.2007	220.1361	0.2247	5.0900e-003	227.2685

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	0.1676					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3993					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	2.0963	0.1660	4.0684	0.0104		0.6111	0.6111		0.6111	0.6111	74.9354	144.0000	218.9354	0.2235	5.0900e-003	226.0378
Landscaping	0.0209	7.7400e-003	0.6691	4.0000e-005		3.6600e-003	3.6600e-003		3.6600e-003	3.6600e-003		1.2007	1.2007	1.2000e-003		1.2307
Total	**3.6841**	**0.1737**	**4.7375**	**0.0104**		**0.6148**	**0.6148**		**0.6148**	**0.6148**	**74.9354**	**145.2007**	**220.1361**	**0.2247**	**5.0900e-003**	**227.2685**

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	0.1676					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3993					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	2.0963	0.1660	4.0684	0.0104		0.6111	0.6111		0.6111	0.6111	74.9354	144.0000	218.9354	0.2235	5.0900e-003	226.0378
Landscaping	0.0209	7.7400e-003	0.6691	4.0000e-005		3.6600e-003	3.6600e-003		3.6600e-003	3.6600e-003		1.2007	1.2007	1.2000e-003		1.2307
Total	**3.6841**	**0.1737**	**4.7375**	**0.0104**		**0.6148**	**0.6148**		**0.6148**	**0.6148**	**74.9354**	**145.2007**	**220.1361**	**0.2247**	**5.0900e-003**	**227.2685**

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 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX C

CALEEMOD MODEL ANNUAL EMISSIONS PRINTOUTS

7221b SD Homes Redlands Apartments

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	7.75	Acre	7.75	337,590.00	0
Parking Lot	589.00	Space	5.30	235,600.00	0
Unenclosed Parking Structure	130.00	Space	1.17	52,000.00	0
Health Club	14.66	1000sqft	0.34	14,660.00	0
Apartments Low Rise	412.00	Dwelling Unit	4.38	412,000.00	1178

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

7221b SD Homes Redlands Apartments - San Bernardino-South Coast County, Annual

Project Characteristics -

Land Use - ~18.94 net acres w/ 412 multi-family DU (res bldg footprint = ~190,909 sf=4.38 acres), 14,662 sf clubhouse, 589 open parking spcs, 130 garage prkng spcs, & rmdr ~7.75 acres landscaping.

Construction Phase - Construction anticipated to begin 4/9/2019 and be completed in April 2020.

Off-road Equipment - CalEEMod default construction timing for the Building Construction phase decreased by ~25%; therefore, construction equipment increased by ~25%.

Demolition - Demolition of multiple existing single-family houses and various industrial sheds totaling ~19,000 square feet.

Grading - Site anticipated to include ~65,000 CY fill - ~5,900 CY cut = ~59,100 CY import.

Architectural Coating - SCAQMD Rule 1113 limits architectural coatings to 50 g/L VOC. Mitigated to 30 g/L VOC for buildings & 100g/L VOC for parking lot striping.

Vehicle Trips - Per TIA, 7.32 trips per DU per weekday. From 10th Ed ITE Sat 8.14 trips/DU, Sun 6.28 trips/DU. On-site clubhouse (health club), no additional vehicle trips.

Woodstoves - SCAQMD Rule 445 prohibits the installation of wood burning devices in new developments.

Sequestration - Per project applicant, approximatley 230 new trees to be planted.

Construction Off-road Equipment Mitigation - Project to use Tier 3 engines or better.

Mobile Land Use Mitigation - Site is ~0.16 miles northwest of Omnitrans Rte 9 stop Barton at Alabama & ~1.52 miles west of downtown Redlands. 412 DU/18.94 acres = 21.75 DU/ac. Sidewalks provided on/off-site.

Water Mitigation - 20% reduction in indoor water use per Cal Green Standards. Water-efficent irrigation systems per City requirements.

Waste Mitigation - AB 341 requires each jurisdiction in CA to divert at least 75% of their waste away from landfills by 2020.

Area Coating - Per SCAQMD Rule 1113 paints limited to 50g/L VOC content for buildings

Energy Mitigation -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	100.00	30.00
tblArchitecturalCoating	EF_Nonresidential_Interior	100.00	30.00
tblArchitecturalCoating	EF_Residential_Exterior	50.00	30.00

tblArchitecturalCoating	EF_Residential_Interior	50.00	30.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	100	50
tblAreaCoating	Area_EF_Nonresidential_Interior	100	50
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	300.00	224.00
tblConstructionPhase	NumDays	20.00	30.00
tblFireplaces	NumberGas	350.20	370.80
tblFireplaces	NumberWood	20.60	0.00
tblGrading	MaterialImported	0.00	59,100.00
tblLandUse	LotAcreage	25.75	4.38
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	4.00
tblSequestration	NumberOfNewTrees	0.00	230.00
tblVehicleTrips	HO_TTP	40.60	41.00
tblVehicleTrips	HS_TTP	19.20	19.00
tblVehicleTrips	HW_TTP	40.20	40.00
tblVehicleTrips	ST_TR	7.16	8.14
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	SU_TR	6.07	6.28
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	WD_TR	6.59	7.32
tblVehicleTrips	WD_TR	32.93	0.00
tblWoodstoves	NumberCatalytic	20.60	0.00
tblWoodstoves	NumberNoncatalytic	20.60	0.00

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					
2019	0.5783	5.3226	4.3107	0.0136	0.7150	0.1760	0.8911	0.2100	0.1644	0.3743	0.0000	1,253.7420	1,253.7420	0.1336	0.0000	1,257.0808
2020	1.1505	1.8507	2.1240	5.8500e-003	0.3163	0.0693	0.3856	0.0849	0.0649	0.1498	0.0000	531.0366	531.0366	0.0533	0.0000	532.3689
Maximum	**1.1505**	**5.3226**	**4.3107**	**0.0136**	**0.7150**	**0.1760**	**0.8911**	**0.2100**	**0.1644**	**0.3743**	**0.0000**	**1,253.7420**	**1,253.7420**	**0.1336**	**0.0000**	**1,257.0808**

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					
2019	0.3669	4.2194	4.4372	0.0136	0.6279	0.1175	0.7455	0.1759	0.1168	0.2927	0.0000	1,253.7416	1,253.7416	0.1336	0.0000	1,257.0804
2020	1.0706	1.5807	2.1945	5.8500e-003	0.3163	0.0568	0.3731	0.0849	0.0565	0.1414	0.0000	531.0365	531.0365	0.0533	0.0000	532.3688
Maximum	**1.0706**	**4.2194**	**4.4372**	**0.0136**	**0.6279**	**0.1175**	**0.7455**	**0.1759**	**0.1168**	**0.2927**	**0.0000**	**1,253.7416**	**1,253.7416**	**0.1336**	**0.0000**	**1,257.0804**

	ROG	NOx	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	**16.85**	**19.14**	**-3.06**	**0.00**	**8.45**	**28.93**	**12.38**	**11.56**	**24.39**	**17.17**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	4-9-2019	7-8-2019	2.6773	1.9861
2	7-9-2019	10-8-2019	1.6609	1.3358
3	10-9-2019	1-8-2020	1.6491	1.3311
4	1-9-2020	4-8-2020	2.0578	1.7872
5	4-9-2020	7-8-2020	0.8044	0.7466
		Highest	2.6773	1.9861

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.8628	0.1263	4.3052	7.2000e-004		0.0297	0.0297		0.0297	0.0297	0.0000	96.0016	96.0016	8.5200e-003	1.6300e-003	96.7012
Energy	0.0372	0.3190	0.1454	2.0300e-003		0.0257	0.0257		0.0257	0.0257	0.0000	1,108.5314	1,108.5314	0.0376	0.0131	1,113.3671
Mobile	1.1519	8.6947	14.6704	0.0531	3.9051	0.0486	3.9537	1.0467	0.0457	1.0925	0.0000	4,908.7327	4,908.7327	0.2654	0.0000	4,915.3667
Waste						0.0000	0.0000		0.0000	0.0000	55.4328	0.0000	55.4328	3.2760	0.0000	137.3324
Water						0.0000	0.0000		0.0000	0.0000	8.7913	176.7512	185.5425	0.9102	0.0228	215.1020
Total	**3.0519**	**9.1400**	**19.1210**	**0.0558**	**3.9051**	**0.1040**	**4.0090**	**1.0467**	**0.1011**	**1.1478**	**64.2240**	**6,290.0169**	**6,354.2410**	**4.4977**	**0.0375**	**6,477.8694**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.8628	0.1263	4.3052	7.2000e-004		0.0297	0.0297		0.0297	0.0297	0.0000	96.0016	96.0016	8.5200e-003	1.6300e-003	96.7012
Energy	0.0372	0.3190	0.1454	2.0300e-003		0.0257	0.0257		0.0257	0.0257	0.0000	1,108.5314	1,108.5314	0.0376	0.0131	1,113.3671
Mobile	0.9464	6.7636	9.6273	0.0327	2.2187	0.0294	2.2481	0.5947	0.0276	0.6223	0.0000	3,026.9026	3,026.9026	0.1975	0.0000	3,031.8388
Waste						0.0000	0.0000		0.0000	0.0000	13.8582	0.0000	13.8582	0.8190	0.0000	34.3331
Water						0.0000	0.0000		0.0000	0.0000	7.0330	153.7583	160.7914	0.7287	0.0184	184.4832
Total	**2.8464**	**7.2089**	**14.0779**	**0.0354**	**2.2187**	**0.0847**	**2.3034**	**0.5947**	**0.0830**	**0.6777**	**20.8912**	**4,385.1940**	**4,406.0852**	**1.7913**	**0.0331**	**4,460.7234**

	ROG	NOx	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	**6.73**	**21.13**	**26.37**	**36.55**	**43.18**	**18.50**	**42.54**	**43.18**	**17.91**	**40.96**	**67.47**	**30.28**	**30.66**	**60.17**	**11.88**	**31.14**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	162.8400
Total	**162.8400**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/9/2019	5/6/2019	5	20	
2	Grading	Grading	5/7/2019	6/17/2019	5	30	
3	Building Construction	Building Construction	6/18/2019	4/25/2020	5	224	
4	Paving	Paving	3/19/2020	4/15/2020	5	20	
5	Architectural Coating	Architectural Coating	3/20/2020	4/30/2020	5	30	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 14.22

Residential Indoor: 834,300; Residential Outdoor: 278,100; Non-Residential Indoor: 21,990; Non-Residential Outdoor: 7,330; Striped Parking Area: 37,511 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	4	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	4	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	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
Demolition	6	15.00	0.00	86.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	7,388.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	11	565.00	149.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	113.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2019

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					9.3500e-003	0.0000	9.3500e-003	1.4200e-003	0.0000	1.4200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0351	0.3578	0.2206	3.9000e-004		0.0180	0.0180		0.0167	0.0167	0.0000	34.6263	34.6263	9.6300e-003	0.0000	34.8672
Total	**0.0351**	**0.3578**	**0.2206**	**3.9000e-004**	**9.3500e-003**	**0.0180**	**0.0273**	**1.4200e-003**	**0.0167**	**0.0181**	**0.0000**	**34.6263**	**34.6263**	**9.6300e-003**	**0.0000**	**34.8672**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.9000e-004	0.0117	1.7500e-003	3.0000e-005	7.4000e-004	4.0000e-005	7.8000e-004	2.0000e-004	4.0000e-005	2.4000e-004	0.0000	3.2461	3.2461	1.9000e-004	0.0000	3.2508
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	8.0000e-004	6.6000e-004	6.4600e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4551	1.4551	5.0000e-005	0.0000	1.4563
Total	**1.0900e-003**	**0.0123**	**8.2100e-003**	**5.0000e-005**	**2.3800e-003**	**5.0000e-005**	**2.4400e-003**	**6.4000e-004**	**5.0000e-005**	**6.9000e-004**	**0.0000**	**4.7012**	**4.7012**	**2.4000e-004**	**0.0000**	**4.7071**

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					3.6500e-003	0.0000	3.6500e-003	5.5000e-004	0.0000	5.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.2500e-003	0.1831	0.2467	3.9000e-004		8.6300e-003	8.6300e-003		8.6300e-003	8.6300e-003	0.0000	34.6263	34.6263	9.6300e-003	0.0000	34.8671
Total	**9.2500e-003**	**0.1831**	**0.2467**	**3.9000e-004**	**3.6500e-003**	**8.6300e-003**	**0.0123**	**5.5000e-004**	**8.6300e-003**	**9.1800e-003**	**0.0000**	**34.6263**	**34.6263**	**9.6300e-003**	**0.0000**	**34.8671**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.9000e-004	0.0117	1.7500e-003	3.0000e-005	7.4000e-004	4.0000e-005	7.8000e-004	2.0000e-004	4.0000e-005	2.4000e-004	0.0000	3.2461	3.2461	1.9000e-004	0.0000	3.2508
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	8.0000e-004	6.6000e-004	6.4600e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4551	1.4551	5.0000e-005	0.0000	1.4563
Total	**1.0900e-003**	**0.0123**	**8.2100e-003**	**5.0000e-005**	**2.3800e-003**	**5.0000e-005**	**2.4400e-003**	**6.4000e-004**	**5.0000e-005**	**6.9000e-004**	**0.0000**	**4.7012**	**4.7012**	**2.4000e-004**	**0.0000**	**4.7071**

3.3 Grading - 2019

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					0.1334	0.0000	0.1334	0.0545	0.0000	0.0545	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0711	0.8178	0.5007	9.3000e-004		0.0357	0.0357		0.0329	0.0329	0.0000	83.5520	83.5520	0.0264	0.0000	84.2129
Total	**0.0711**	**0.8178**	**0.5007**	**9.3000e-004**	**0.1334**	**0.0357**	**0.1692**	**0.0545**	**0.0329**	**0.0873**	**0.0000**	**83.5520**	**83.5520**	**0.0264**	**0.0000**	**84.2129**

3.3 Grading - 2019

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	0.0252	1.0014	0.1504	2.9000e-003	0.0636	3.3000e-003	0.0669	0.0175	3.1500e-003	0.0206	0.0000	278.8604	278.8604	0.0161	0.0000	279.2622
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	1.6100e-003	1.3100e-003	0.0129	3.0000e-005	3.2900e-003	2.0000e-005	3.3100e-003	8.7000e-004	2.0000e-005	8.9000e-004	0.0000	2.9102	2.9102	1.0000e-004	0.0000	2.9126
Total	**0.0268**	**1.0027**	**0.1633**	**2.9300e-003**	**0.0669**	**3.3200e-003**	**0.0702**	**0.0183**	**3.1700e-003**	**0.0215**	**0.0000**	**281.7706**	**281.7706**	**0.0162**	**0.0000**	**282.1748**

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					0.0520	0.0000	0.0520	0.0212	0.0000	0.0212	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0229	0.4497	0.5508	9.3000e-004		0.0195	0.0195		0.0195	0.0195	0.0000	83.5519	83.5519	0.0264	0.0000	84.2128
Total	**0.0229**	**0.4497**	**0.5508**	**9.3000e-004**	**0.0520**	**0.0195**	**0.0715**	**0.0212**	**0.0195**	**0.0407**	**0.0000**	**83.5519**	**83.5519**	**0.0264**	**0.0000**	**84.2128**

3.3 Grading - 2019

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	0.0252	1.0014	0.1504	2.9000e-003	0.0636	3.3000e-003	0.0669	0.0175	3.1500e-003	0.0206	0.0000	278.8604	278.8604	0.0161	0.0000	279.2622
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	1.6100e-003	1.3100e-003	0.0129	3.0000e-005	3.2900e-003	2.0000e-005	3.3100e-003	8.7000e-004	2.0000e-005	8.9000e-004	0.0000	2.9102	2.9102	1.0000e-004	0.0000	2.9126
Total	**0.0268**	**1.0027**	**0.1633**	**2.9300e-003**	**0.0669**	**3.3200e-003**	**0.0702**	**0.0183**	**3.1700e-003**	**0.0215**	**0.0000**	**281.7706**	**281.7706**	**0.0162**	**0.0000**	**282.1748**

3.4 Building Construction - 2019

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	0.1921	1.7309	1.4363	2.2000e-003		0.1084	0.1084		0.1015	0.1015	0.0000	192.6370	192.6370	0.0489	0.0000	193.8592
Total	**0.1921**	**1.7309**	**1.4363**	**2.2000e-003**		**0.1084**	**0.1084**		**0.1015**	**0.1015**	**0.0000**	**192.6370**	**192.6370**	**0.0489**	**0.0000**	**193.8592**

3.4 Building Construction - 2019

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	0.0384	1.2268	0.2658	2.8200e-003	0.0662	7.6100e-003	0.0738	0.0191	7.2800e-003	0.0264	0.0000	270.0536	270.0536	0.0194	0.0000	270.5395
Worker	0.2136	0.1742	1.7159	4.2800e-003	0.4368	2.9900e-003	0.4397	0.1160	2.7600e-003	0.1188	0.0000	386.4012	386.4012	0.0128	0.0000	386.7202
Total	**0.2521**	**1.4010**	**1.9817**	**7.1000e-003**	**0.5030**	**0.0106**	**0.5136**	**0.1351**	**0.0100**	**0.1451**	**0.0000**	**656.4548**	**656.4548**	**0.0322**	**0.0000**	**657.2597**

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	0.0549	1.1706	1.4865	2.2000e-003		0.0755	0.0755		0.0755	0.0755	0.0000	192.6368	192.6368	0.0489	0.0000	193.8589
Total	**0.0549**	**1.1706**	**1.4865**	**2.2000e-003**		**0.0755**	**0.0755**		**0.0755**	**0.0755**	**0.0000**	**192.6368**	**192.6368**	**0.0489**	**0.0000**	**193.8589**

3.4 Building Construction - 2019

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	0.0384	1.2268	0.2658	2.8200e-003	0.0662	7.6100e-003	0.0738	0.0191	7.2800e-003	0.0264	0.0000	270.0536	270.0536	0.0194	0.0000	270.5395
Worker	0.2136	0.1742	1.7159	4.2800e-003	0.4368	2.9900e-003	0.4397	0.1160	2.7600e-003	0.1188	0.0000	386.4012	386.4012	0.0128	0.0000	386.7202
Total	**0.2521**	**1.4010**	**1.9817**	**7.1000e-003**	**0.5030**	**0.0106**	**0.5136**	**0.1351**	**0.0100**	**0.1451**	**0.0000**	**656.4548**	**656.4548**	**0.0322**	**0.0000**	**657.2597**

3.4 Building Construction - 2020

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	0.1016	0.9265	0.8310	1.2900e-003		0.0552	0.0552		0.0517	0.0517	0.0000	111.5992	111.5992	0.0285	0.0000	112.3106
Total	**0.1016**	**0.9265**	**0.8310**	**1.2900e-003**		**0.0552**	**0.0552**		**0.0517**	**0.0517**	**0.0000**	**111.5992**	**111.5992**	**0.0285**	**0.0000**	**112.3106**

3.4 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0192	0.6601	0.1381	1.6500e-003	0.0390	3.0200e-003	0.0420	0.0113	2.8900e-003	0.0141	0.0000	157.8753	157.8753	0.0109	0.0000	158.1484
Worker	0.1158	0.0910	0.9094	2.4400e-003	0.2571	1.7200e-003	0.2588	0.0683	1.5800e-003	0.0699	0.0000	220.3643	220.3643	6.6200e-003	0.0000	220.5298
Total	**0.1350**	**0.7511**	**1.0475**	**4.0900e-003**	**0.2961**	**4.7400e-003**	**0.3008**	**0.0795**	**4.4700e-003**	**0.0840**	**0.0000**	**378.2396**	**378.2396**	**0.0175**	**0.0000**	**378.6782**

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	0.0323	0.6891	0.8750	1.2900e-003		0.0444	0.0444		0.0444	0.0444	0.0000	111.5991	111.5991	0.0285	0.0000	112.3105
Total	**0.0323**	**0.6891**	**0.8750**	**1.2900e-003**		**0.0444**	**0.0444**		**0.0444**	**0.0444**	**0.0000**	**111.5991**	**111.5991**	**0.0285**	**0.0000**	**112.3105**

3.4 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0192	0.6601	0.1381	1.6500e-003	0.0390	3.0200e-003	0.0420	0.0113	2.8900e-003	0.0141	0.0000	157.8753	157.8753	0.0109	0.0000	158.1484
Worker	0.1158	0.0910	0.9094	2.4400e-003	0.2571	1.7200e-003	0.2588	0.0683	1.5800e-003	0.0699	0.0000	220.3643	220.3643	6.6200e-003	0.0000	220.5298
Total	**0.1350**	**0.7511**	**1.0475**	**4.0900e-003**	**0.2961**	**4.7400e-003**	**0.3008**	**0.0795**	**4.4700e-003**	**0.0840**	**0.0000**	**378.2396**	**378.2396**	**0.0175**	**0.0000**	**378.6782**

3.5 Paving - 2020

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	0.0136	0.1407	0.1465	2.3000e-004		7.5300e-003	7.5300e-003		6.9300e-003	6.9300e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1902
Paving	6.9400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0205**	**0.1407**	**0.1465**	**2.3000e-004**		**7.5300e-003**	**7.5300e-003**		**6.9300e-003**	**6.9300e-003**	**0.0000**	**20.0282**	**20.0282**	**6.4800e-003**	**0.0000**	**20.1902**

3.5 Paving - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.4000e-004	5.8000e-004	5.8200e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4097	1.4097	4.0000e-005	0.0000	1.4108
Total	**7.4000e-004**	**5.8000e-004**	**5.8200e-003**	**2.0000e-005**	**1.6400e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.4097**	**1.4097**	**4.0000e-005**	**0.0000**	**1.4108**

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	5.6100e-003	0.1130	0.1730	2.3000e-004		6.0900e-003	6.0900e-003		6.0900e-003	6.0900e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1901
Paving	6.9400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0126**	**0.1130**	**0.1730**	**2.3000e-004**		**6.0900e-003**	**6.0900e-003**		**6.0900e-003**	**6.0900e-003**	**0.0000**	**20.0282**	**20.0282**	**6.4800e-003**	**0.0000**	**20.1901**

3.5 Paving - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.4000e-004	5.8000e-004	5.8200e-003	2.0000e-005	1.6400e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4097	1.4097	4.0000e-005	0.0000	1.4108
Total	**7.4000e-004**	**5.8000e-004**	**5.8200e-003**	**2.0000e-005**	**1.6400e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.4097**	**1.4097**	**4.0000e-005**	**0.0000**	**1.4108**

3.6 Architectural Coating - 2020

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	0.8807					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6300e-003	0.0253	0.0275	4.0000e-005		1.6600e-003	1.6600e-003		1.6600e-003	1.6600e-003	0.0000	3.8299	3.8299	3.0000e-004	0.0000	3.8373
Total	**0.8843**	**0.0253**	**0.0275**	**4.0000e-005**		**1.6600e-003**	**1.6600e-003**		**1.6600e-003**	**1.6600e-003**	**0.0000**	**3.8299**	**3.8299**	**3.0000e-004**	**0.0000**	**3.8373**

3.6 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3700e-003	6.5800e-003	0.0657	1.8000e-004	0.0186	1.2000e-004	0.0187	4.9400e-003	1.1000e-004	5.0500e-003	0.0000	15.9300	15.9300	4.8000e-004	0.0000	15.9419
Total	**8.3700e-003**	**6.5800e-003**	**0.0657**	**1.8000e-004**	**0.0186**	**1.2000e-004**	**0.0187**	**4.9400e-003**	**1.1000e-004**	**5.0500e-003**	**0.0000**	**15.9300**	**15.9300**	**4.8000e-004**	**0.0000**	**15.9419**

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	0.8807					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.9000e-004	0.0204	0.0275	4.0000e-005		1.4300e-003	1.4300e-003		1.4300e-003	1.4300e-003	0.0000	3.8299	3.8299	3.0000e-004	0.0000	3.8373
Total	**0.8816**	**0.0204**	**0.0275**	**4.0000e-005**		**1.4300e-003**	**1.4300e-003**		**1.4300e-003**	**1.4300e-003**	**0.0000**	**3.8299**	**3.8299**	**3.0000e-004**	**0.0000**	**3.8373**

3.6 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3700e-003	6.5800e-003	0.0657	1.8000e-004	0.0186	1.2000e-004	0.0187	4.9400e-003	1.1000e-004	5.0500e-003	0.0000	15.9300	15.9300	4.8000e-004	0.0000	15.9419
Total	**8.3700e-003**	**6.5800e-003**	**0.0657**	**1.8000e-004**	**0.0186**	**1.2000e-004**	**0.0187**	**4.9400e-003**	**1.1000e-004**	**5.0500e-003**	**0.0000**	**15.9300**	**15.9300**	**4.8000e-004**	**0.0000**	**15.9419**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive 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	0.9464	6.7636	9.6273	0.0327	2.2187	0.0294	2.2481	0.5947	0.0276	0.6223	0.0000	3,026.9026	3,026.9026	0.1975	0.0000	3,031.8388
Unmitigated	1.1519	8.6947	14.6704	0.0531	3.9051	0.0486	3.9537	1.0467	0.0457	1.0925	0.0000	4,908.7327	4,908.7327	0.2654	0.0000	4,915.3667

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	3,015.84	3,353.68	2587.36	10,255,128	5,826,490
Health Club	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	3,015.84	3,353.68	2,587.36	10,255,128	5,826,490

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
Apartments Low Rise	14.70	5.90	8.70	40.00	19.00	41.00	86	11	3
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	52	39	9
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Unenclosed Parking Structure	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.546179	0.037976	0.179086	0.122965	0.018430	0.005460	0.017497	0.061396	0.001337	0.001657	0.006117	0.000817	0.001082
Health Club	0.546179	0.037976	0.179086	0.122965	0.018430	0.005460	0.017497	0.061396	0.001337	0.001657	0.006117	0.000817	0.001082
Other Non-Asphalt Surfaces	0.546179	0.037976	0.179086	0.122965	0.018430	0.005460	0.017497	0.061396	0.001337	0.001657	0.006117	0.000817	0.001082
Parking Lot	0.546179	0.037976	0.179086	0.122965	0.018430	0.005460	0.017497	0.061396	0.001337	0.001657	0.006117	0.000817	0.001082
Unenclosed Parking Structure	0.546179	0.037976	0.179086	0.122965	0.018430	0.005460	0.017497	0.061396	0.001337	0.001657	0.006117	0.000817	0.001082

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	740.6948	740.6948	0.0306	6.3300e-003	743.3447
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	740.6948	740.6948	0.0306	6.3300e-003	743.3447
NaturalGas Mitigated	0.0372	0.3190	0.1454	2.0300e-003		0.0257	0.0257		0.0257	0.0257	0.0000	367.8366	367.8366	7.0500e-003	6.7400e-003	370.0225
NaturalGas Unmitigated	0.0372	0.3190	0.1454	2.0300e-003		0.0257	0.0257		0.0257	0.0257	0.0000	367.8366	367.8366	7.0500e-003	6.7400e-003	370.0225

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					
Apartments Low Rise	6.41669e+006	0.0346	0.2957	0.1258	1.8900e-003		0.0239	0.0239		0.0239	0.0239	0.0000	342.4192	342.4192	6.5600e-003	6.2800e-003	344.4541
Health Club	476303	2.5700e-003	0.0234	0.0196	1.4000e-004		1.7700e-003	1.7700e-003		1.7700e-003	1.7700e-003	0.0000	25.4174	25.4174	4.9000e-004	4.7000e-004	25.5684
Other Non-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
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking Structure	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
Total		**0.0372**	**0.3190**	**0.1454**	**2.0300e-003**		**0.0257**	**0.0257**		**0.0257**	**0.0257**	**0.0000**	**367.8366**	**367.8366**	**7.0500e-003**	**6.7500e-003**	**370.0225**

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					
Apartments Low Rise	6.41669e+006	0.0346	0.2957	0.1258	1.8900e-003		0.0239	0.0239		0.0239	0.0239	0.0000	342.4192	342.4192	6.5600e-003	6.2800e-003	344.4541
Health Club	476303	2.5700e-003	0.0234	0.0196	1.4000e-004		1.7700e-003	1.7700e-003		1.7700e-003	1.7700e-003	0.0000	25.4174	25.4174	4.9000e-004	4.7000e-004	25.5684
Other Non-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
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking Structure	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
Total		**0.0372**	**0.3190**	**0.1454**	**2.0300e-003**		**0.0257**	**0.0257**		**0.0257**	**0.0257**	**0.0000**	**367.8366**	**367.8366**	**7.0500e-003**	**6.7500e-003**	**370.0225**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	2.00243e+006	638.0162	0.0263	5.4500e-003	640.2987
Health Club	148799	47.4106	1.9600e-003	4.0000e-004	47.5802
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	82460	26.2735	1.0800e-003	2.2000e-004	26.3675
Unenclosed Parking Structure	91000	28.9946	1.2000e-003	2.5000e-004	29.0983
Total		**740.6948**	**0.0306**	**6.3200e-003**	**743.3447**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	2.00243e+006	638.0162	0.0263	5.4500e-003	640.2987
Health Club	148799	47.4106	1.9600e-003	4.0000e-004	47.5802
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	82460	26.2735	1.0800e-003	2.2000e-004	26.3675
Unenclosed Parking Structure	91000	28.9946	1.2000e-003	2.5000e-004	29.0983
Total		**740.6948**	**0.0306**	**6.3200e-003**	**743.3447**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.8628	0.1263	4.3052	7.2000e-004		0.0297	0.0297		0.0297	0.0297	0.0000	96.0016	96.0016	8.5200e-003	1.6300e-003	96.7012
Unmitigated	1.8628	0.1263	4.3052	7.2000e-004		0.0297	0.0297		0.0297	0.0297	0.0000	96.0016	96.0016	8.5200e-003	1.6300e-003	96.7012

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	0.1410					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.5822					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	9.0000e-003	0.0769	0.0327	4.9000e-004		6.2200e-003	6.2200e-003		6.2200e-003	6.2200e-003	0.0000	89.0429	89.0429	1.7100e-003	1.6300e-003	89.5720
Landscaping	0.1307	0.0494	4.2725	2.3000e-004		0.0235	0.0235		0.0235	0.0235	0.0000	6.9588	6.9588	6.8200e-003	0.0000	7.1292
Total	**1.8629**	**0.1263**	**4.3052**	**7.2000e-004**		**0.0297**	**0.0297**		**0.0297**	**0.0297**	**0.0000**	**96.0016**	**96.0016**	**8.5300e-003**	**1.6300e-003**	**96.7012**

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	0.1410					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.5822					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	9.0000e-003	0.0769	0.0327	4.9000e-004		6.2200e-003	6.2200e-003		6.2200e-003	6.2200e-003	0.0000	89.0429	89.0429	1.7100e-003	1.6300e-003	89.5720
Landscaping	0.1307	0.0494	4.2725	2.3000e-004		0.0235	0.0235		0.0235	0.0235	0.0000	6.9588	6.9588	6.8200e-003	0.0000	7.1292
Total	**1.8629**	**0.1263**	**4.3052**	**7.2000e-004**		**0.0297**	**0.0297**		**0.0297**	**0.0297**	**0.0000**	**96.0016**	**96.0016**	**8.5300e-003**	**1.6300e-003**	**96.7012**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	160.7914	0.7287	0.0184	184.4832
Unmitigated	185.5425	0.9102	0.0228	215.1020

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	26.8435 / 16.923	179.7892	0.8818	0.0221	208.4240
Health Club	0.867038 / 0.531411	5.7534	0.0285	7.1000e-004	6.6781
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**185.5425**	**0.9103**	**0.0228**	**215.1020**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	21.4748 / 16.923	155.8125	0.7059	0.0178	178.7632
Health Club	0.693631 / 0.531411	4.9789	0.0228	5.7000e-004	5.7200
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**160.7914**	**0.7287**	**0.0184**	**184.4832**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	13.8582	0.8190	0.0000	34.3331
Unmitigated	55.4328	3.2760	0.0000	137.3324

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	189.52	38.4709	2.2736	0.0000	95.3099
Health Club	83.56	16.9619	1.0024	0.0000	42.0225
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**55.4328**	**3.2760**	**0.0000**	**137.3324**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	47.38	9.6177	0.5684	0.0000	23.8275
Health Club	20.89	4.2405	0.2506	0.0000	10.5056
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**13.8582**	**0.8190**	**0.0000**	**34.3331**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	162.8400	0.0000	0.0000	162.8400

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	230	162.8400	0.0000	0.0000	162.8400
Total		**162.8400**	**0.0000**	**0.0000**	**162.8400**

7221b SD Homes Redlands Apartments - OPERATIONAL ANALYSIS ONLY EXISTING USES

San Bernardino-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	4.00	1000sqft	0.09	4,000.00	0
Single Family Housing	8.00	Dwelling Unit	2.60	14,400.00	23
Hardware/Paint Store	52.27	1000sqft	1.20	52,272.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - OPERATIONAL ANALYSIS ONLY - EXISTING USES TO BE REMOVED

Land Use - Exsiting uses to be removed from the site include 8 SFD, 4 TSF specialty trade contractor, & 1.2 acres (52,272 sf) nursery wholesale.

Vehicle Trips - Per TIA, 10.22 trips/TSF/day specialty trade contractor, 19.50 trips/ac/day nursery wholesale (~0.44 trips/TSF/day), & 9.44 trips/DU/day single-family.
Energy Use -

Table Name	Column Name	Default Value	New Value
tblLandUse	LandUseSquareFeet	52,270.00	52,272.00
tblVehicleTrips	ST_TR	1.32	10.22
tblVehicleTrips	ST_TR	82.52	0.44
tblVehicleTrips	ST_TR	9.91	9.44
tblVehicleTrips	SU_TR	0.68	10.22
tblVehicleTrips	SU_TR	68.65	0.44
tblVehicleTrips	SU_TR	8.62	9.44
tblVehicleTrips	WD_TR	6.97	10.22
tblVehicleTrips	WD_TR	51.29	0.44
tblVehicleTrips	WD_TR	9.52	9.44

2.0 Emissions Summary

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	0.3148	3.0400e-003	0.1345	1.3000e-004		8.1000e-003	8.1000e-003		8.1000e-003	8.1000e-003	0.8498	1.7691	2.6189	2.6700e-003	6.0000e-005	2.7028
Energy	2.6500e-003	0.0233	0.0149	1.4000e-004		1.8300e-003	1.8300e-003		1.8300e-003	1.8300e-003	0.0000	271.6960	271.6960	0.0106	2.5800e-003	272.7299
Mobile	0.0588	0.4340	0.7530	2.5300e-003	0.1827	2.6600e-003	0.1853	0.0490	2.5100e-003	0.0515	0.0000	234.1044	234.1044	0.0131	0.0000	234.4329
Waste						0.0000	0.0000		0.0000	0.0000	120.5807	0.0000	120.5807	7.1261	0.0000	298.7336
Water						0.0000	0.0000		0.0000	0.0000	1.6872	31.6266	33.3138	0.1746	4.3600e-003	38.9784
Total	**0.3762**	**0.4604**	**0.9025**	**2.8000e-003**	**0.1827**	**0.0126**	**0.1953**	**0.0490**	**0.0124**	**0.0614**	**123.1176**	**539.1961**	**662.3137**	**7.3272**	**7.0000e-003**	**847.5776**

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	0.3148	3.0400e-003	0.1345	1.3000e-004		8.1000e-003	8.1000e-003		8.1000e-003	8.1000e-003	0.8498	1.7691	2.6189	2.6700e-003	6.0000e-005	2.7028
Energy	2.6500e-003	0.0233	0.0149	1.4000e-004		1.8300e-003	1.8300e-003		1.8300e-003	1.8300e-003	0.0000	271.6960	271.6960	0.0106	2.5800e-003	272.7299
Mobile	0.0588	0.4340	0.7530	2.5300e-003	0.1827	2.6600e-003	0.1853	0.0490	2.5100e-003	0.0515	0.0000	234.1044	234.1044	0.0131	0.0000	234.4329
Waste						0.0000	0.0000		0.0000	0.0000	120.5807	0.0000	120.5807	7.1261	0.0000	298.7336
Water						0.0000	0.0000		0.0000	0.0000	1.6872	31.6266	33.3138	0.1746	4.3600e-003	38.9784
Total	**0.3762**	**0.4604**	**0.9025**	**2.8000e-003**	**0.1827**	**0.0126**	**0.1953**	**0.0490**	**0.0124**	**0.0614**	**123.1176**	**539.1961**	**662.3137**	**7.3272**	**7.0000e-003**	**847.5776**

	ROG	NOx	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**

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	0.0588	0.4340	0.7530	2.5300e-003	0.1827	2.6600e-003	0.1853	0.0490	2.5100e-003	0.0515	0.0000	234.1044	234.1044	0.0131	0.0000	234.4329
Unmitigated	0.0588	0.4340	0.7530	2.5300e-003	0.1827	2.6600e-003	0.1853	0.0490	2.5100e-003	0.0515	0.0000	234.1044	234.1044	0.0131	0.0000	234.4329

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	40.88	40.88	40.88	181,028	181,028
Hardware/Paint Store	23.00	23.00	23.00	40,592	40,592
Single Family Housing	75.52	75.52	75.52	258,063	258,063
Total	139.40	139.40	139.40	479,683	479,683

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
General Light Industry	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3
Hardware/Paint Store	16.60	8.40	6.90	13.60	67.40	19.00	45	29	26
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.541740	0.038987	0.178620	0.126833	0.019742	0.005671	0.017070	0.060066	0.001326	0.001715	0.006244	0.000823	0.001163
Hardware/Paint Store	0.541740	0.038987	0.178620	0.126833	0.019742	0.005671	0.017070	0.060066	0.001326	0.001715	0.006244	0.000823	0.001163
Single Family Housing	0.541740	0.038987	0.178620	0.126833	0.019742	0.005671	0.017070	0.060066	0.001326	0.001715	0.006244	0.000823	0.001163

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	245.5065	245.5065	0.0101	2.1000e-003	246.3848
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	245.5065	245.5065	0.0101	2.1000e-003	246.3848
NaturalGas Mitigated	2.6500e-003	0.0233	0.0149	1.4000e-004		1.8300e-003	1.8300e-003		1.8300e-003	1.8300e-003	0.0000	26.1895	26.1895	5.0000e-004	4.8000e-004	26.3452
NaturalGas Unmitigated	2.6500e-003	0.0233	0.0149	1.4000e-004		1.8300e-003	1.8300e-003		1.8300e-003	1.8300e-003	0.0000	26.1895	26.1895	5.0000e-004	4.8000e-004	26.3452

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					
General Light Industry	129960	7.0000e-004	6.3700e-003	5.3500e-003	4.0000e-005		4.8000e-004	4.8000e-004		4.8000e-004	4.8000e-004	0.0000	6.9352	6.9352	1.3000e-004	1.3000e-004	6.9764
Hardware/Paint Store	116044	6.3000e-004	5.6900e-003	4.7800e-003	3.0000e-005		4.3000e-004	4.3000e-004		4.3000e-004	4.3000e-004	0.0000	6.1925	6.1925	1.2000e-004	1.1000e-004	6.2293
Single Family Housing	244769	1.3200e-003	0.0113	4.8000e-003	7.0000e-005		9.1000e-004	9.1000e-004		9.1000e-004	9.1000e-004	0.0000	13.0618	13.0618	2.5000e-004	2.4000e-004	13.1394
Total		**2.6500e-003**	**0.0233**	**0.0149**	**1.4000e-004**		**1.8200e-003**	**1.8200e-003**		**1.8200e-003**	**1.8200e-003**	**0.0000**	**26.1895**	**26.1895**	**5.0000e-004**	**4.8000e-004**	**26.3452**

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					
General Light Industry	129960	7.0000e-004	6.3700e-003	5.3500e-003	4.0000e-005		4.8000e-004	4.8000e-004		4.8000e-004	4.8000e-004	0.0000	6.9352	6.9352	1.3000e-004	1.3000e-004	6.9764
Hardware/Paint Store	116044	6.3000e-004	5.6900e-003	4.7800e-003	3.0000e-005		4.3000e-004	4.3000e-004		4.3000e-004	4.3000e-004	0.0000	6.1925	6.1925	1.2000e-004	1.1000e-004	6.2293
Single Family Housing	244769	1.3200e-003	0.0113	4.8000e-003	7.0000e-005		9.1000e-004	9.1000e-004		9.1000e-004	9.1000e-004	0.0000	13.0618	13.0618	2.5000e-004	2.4000e-004	13.1394
Total		**2.6500e-003**	**0.0233**	**0.0149**	**1.4000e-004**		**1.8200e-003**	**1.8200e-003**		**1.8200e-003**	**1.8200e-003**	**0.0000**	**26.1895**	**26.1895**	**5.0000e-004**	**4.8000e-004**	**26.3452**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	40600	12.9360	5.3000e-004	1.1000e-004	12.9823
Hardware/Paint Store	660195	210.3524	8.6800e-003	1.8000e-003	211.1049
Single Family Housing	69731.8	22.2181	9.2000e-004	1.9000e-004	22.2975
Total		**245.5065**	**0.0101**	**2.1000e-003**	**246.3848**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	40600	12.9360	5.3000e-004	1.1000e-004	12.9823
Hardware/Paint Store	660195	210.3524	8.6800e-003	1.8000e-003	211.1049
Single Family Housing	69731.8	22.2181	9.2000e-004	1.9000e-004	22.2975
Total		**245.5065**	**0.0101**	**2.1000e-003**	**246.3848**

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	0.3148	3.0400e-003	0.1345	1.3000e-004		8.1000e-003	8.1000e-003		8.1000e-003	8.1000e-003	0.8498	1.7691	2.6189	2.6700e-003	6.0000e-005	2.7028
Unmitigated	0.3148	3.0400e-003	0.1345	1.3000e-004		8.1000e-003	8.1000e-003		8.1000e-003	8.1000e-003	0.8498	1.7691	2.6189	2.6700e-003	6.0000e-005	2.7028

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	0.0306					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2554					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0262	2.0700e-003	0.0509	1.3000e-004		7.6400e-003	7.6400e-003		7.6400e-003	7.6400e-003	0.8498	1.6329	2.4827	2.5300e-003	6.0000e-005	2.5632
Landscaping	2.6100e-003	9.7000e-004	0.0836	0.0000		4.6000e-004	4.6000e-004		4.6000e-004	4.6000e-004	0.0000	0.1362	0.1362	1.4000e-004	0.0000	0.1396
Total	**0.3148**	**3.0400e-003**	**0.1345**	**1.3000e-004**		**8.1000e-003**	**8.1000e-003**		**8.1000e-003**	**8.1000e-003**	**0.8498**	**1.7691**	**2.6189**	**2.6700e-003**	**6.0000e-005**	**2.7028**

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	0.0306					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2554					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0262	2.0700e-003	0.0509	1.3000e-004		7.6400e-003	7.6400e-003		7.6400e-003	7.6400e-003	0.8498	1.6329	2.4827	2.5300e-003	6.0000e-005	2.5632
Landscaping	2.6100e-003	9.7000e-004	0.0836	0.0000		4.6000e-004	4.6000e-004		4.6000e-004	4.6000e-004	0.0000	0.1362	0.1362	1.4000e-004	0.0000	0.1396
Total	**0.3148**	**3.0400e-003**	**0.1345**	**1.3000e-004**		**8.1000e-003**	**8.1000e-003**		**8.1000e-003**	**8.1000e-003**	**0.8498**	**1.7691**	**2.6189**	**2.6700e-003**	**6.0000e-005**	**2.7028**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	33.3138	0.1746	4.3600e-003	38.9784
Unmitigated	33.3138	0.1746	4.3600e-003	38.9784

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0.925 / 0	4.1311	0.0303	7.4000e-004	5.1104
Hardware/Paint Store	3.87177 / 2.37302	25.6916	0.1272	3.1900e-003	29.8209
Single Family Housing	0.521232 / 0.328603	3.4911	0.0171	4.3000e-004	4.0471
Total		**33.3138**	**0.1746**	**4.3600e-003**	**38.9784**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0.925 / 0	4.1311	0.0303	7.4000e-004	5.1104
Hardware/Paint Store	3.87177 / 2.37302	25.6916	0.1272	3.1900e-003	29.8209
Single Family Housing	0.521232 / 0.328603	3.4911	0.0171	4.3000e-004	4.0471
Total		**33.3138**	**0.1746**	**4.3600e-003**	**38.9784**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	120.5807	7.1261	0.0000	298.7336
Unmitigated	120.5807	7.1261	0.0000	298.7336

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	4.96	1.0068	0.0595	0.0000	2.4944
Hardware/Paint Store	579.63	117.6597	6.9535	0.0000	291.4968
Single Family Housing	9.43	1.9142	0.1131	0.0000	4.7424
Total		**120.5807**	**7.1261**	**0.0000**	**298.7336**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	4.96	1.0068	0.0595	0.0000	2.4944
Hardware/Paint Store	579.63	117.6597	6.9535	0.0000	291.4968
Single Family Housing	9.43	1.9142	0.1131	0.0000	4.7424
Total		**120.5807**	**7.1261**	**0.0000**	**298.7336**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

THIS PAGE INTENTIONALLY LEFT BLANK