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MEMORANDUM

DATE: December 2, 2019

TO: John Arnau, Manager, Environmental Services, CEQA/Habitat Support, OC Waste & Recycling

FROM: Zhe Chen, Senior Air Quality Specialist, LSA Associates

SUBJECT: Air Quality, Criteria Air Pollutant Health Risk, Greenhouse Gas, and Energy Analysis for the Bee Canyon Greenery Project

This memorandum has been prepared to evaluate the potential air quality, health risk, greenhouse gas (GHG) emissions, and energy impacts associated with the proposed Bee Canyon Greenery Project (project) located in the Frank R. Bowerman (FRB) Landfill in an unincorporated portion of Orange County, California. This report provides a project-specific air quality, health risk, GHG emissions, and energy impact analysis by examining the impacts of the proposed project on regional air quality, regional energy use, and the health of nearby sensitive receptors. This analysis follows the guidelines identified by the South Coast Air Quality Management District (SCAQMD) in its *CEQA Air Quality Handbook* (SCAQMD 1993), and associated updates.

PROJECT DESCRIPTION

The project site is at FRB landfill north of the City of Irvine in an unincorporated portion of Orange County, as shown on Figure 1. The proposed composting facility site plan is shown on Figure 2.

The project would be an open windrow composting facility, which is typically used for green waste and wood waste organic materials only. The green waste and wood waste is placed in long rows called windrows. The windrows are turned using compost windrow turners to improve porosity and oxygen content, mix in or remove moisture, and redistribute cooler and hotter portions of the piles. Open windrow composting is a commonly used composting operation method. Composting process control parameters include the initial ratios of carbon- and nitrogen-rich materials, the amount of bulking agent needed added to assure air porosity, the pile size, the moisture content, and the turning frequency. The temperature of the windrows must be measured and logged constantly to determine the optimum time for turning them for quicker compost production. Finished compost would be placed on top of the active compost piles to reduce odors and volatile organic compound emissions.

Construction would take approximately two months. The site is currently vacant, requiring minor site preparation to prepare for grading. Construction activities would include building a berm and retention basin, and installing water and electrical lines.

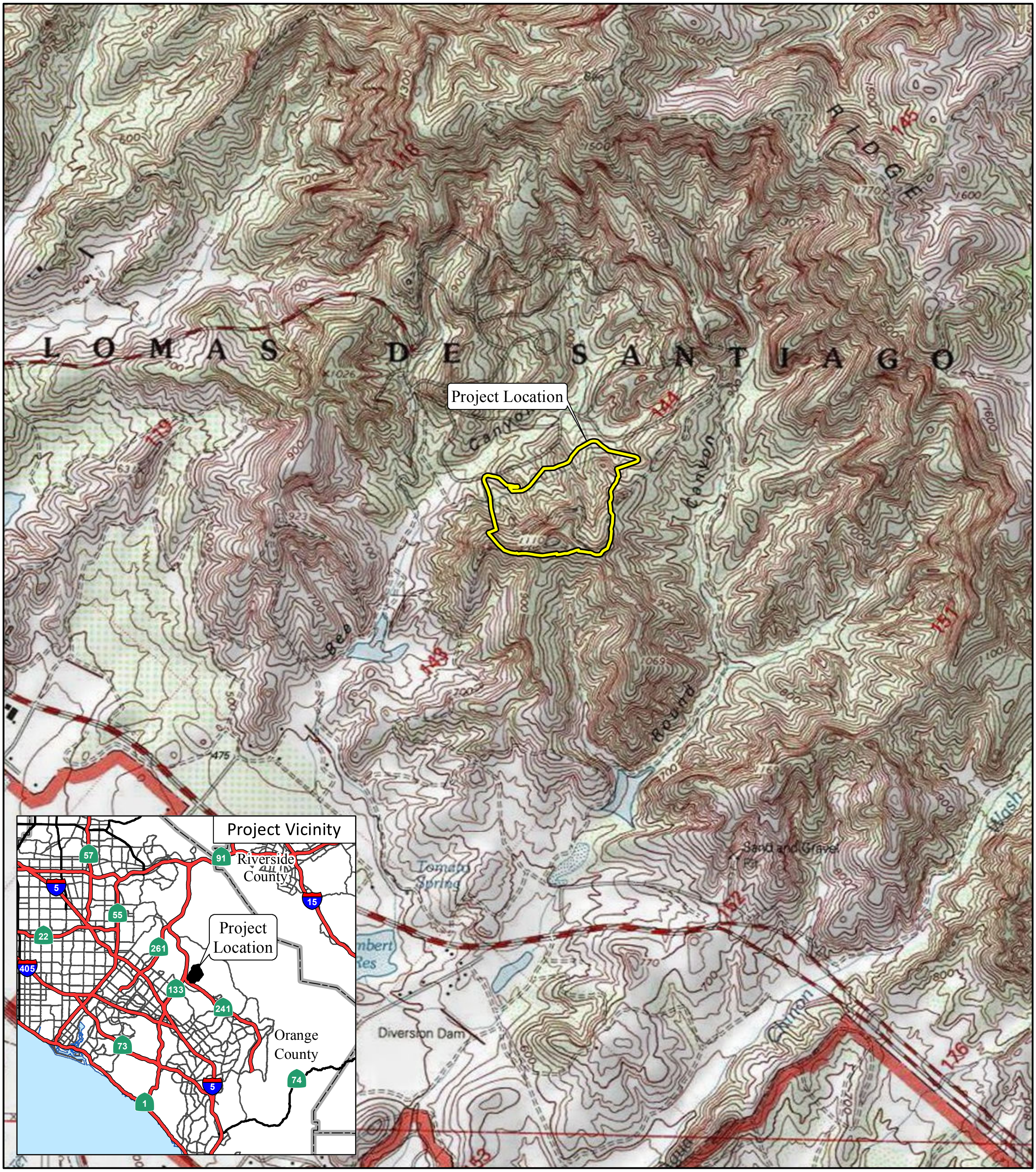

FIGURE 1

LEGEND

Project Location

0 1000 2000
FEET

Regional and Project Location Map

SOURCE: USGS 7.5' Quad., *El Toro, CA* (1982);

I:\OCY1701.10\GIS\MXD\ProjectLocation.mxd (5/9/2019)

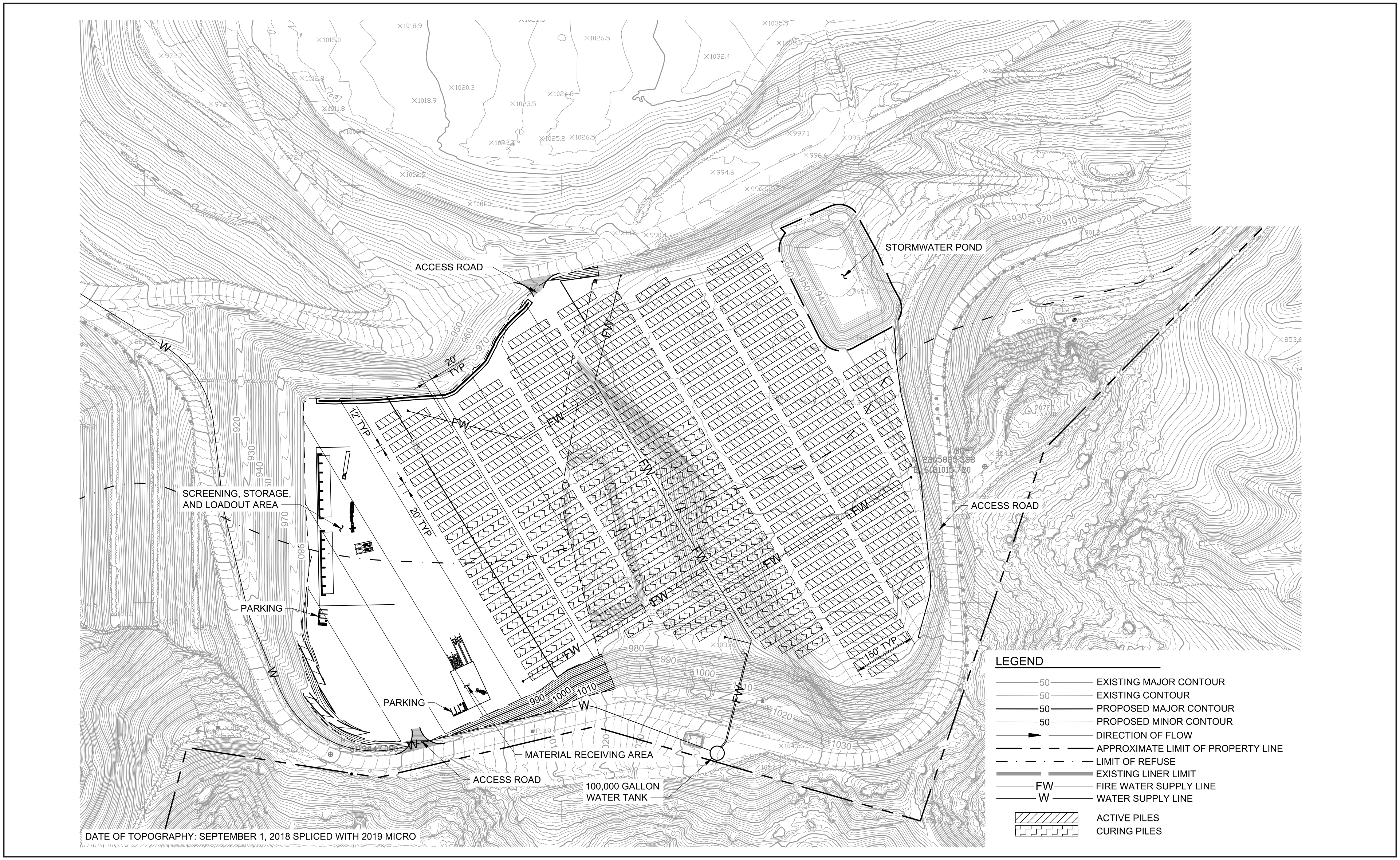

FIGURE 2

0 175 350
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SOURCE: Tetra Tech/BAS (3/2019)

Bee Canyon Greenery

Site Plan

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Existing Sensitive Land Uses in the Project Area

Sensitive receptors include residences, schools, hospitals, and similar uses sensitive to air quality. The project site is surrounded primarily by open space, with some light industrial and residential development. The areas adjacent to the project site include the following uses:

- **North:** Open space
- **South:** Single-family residences and open space within the City of Irvine
- **West:** Light industrial development
- **East:** Open space

The single-family residences are across State Route 241 (SR-241) within the City of Irvine. The distance from the edge of the composting facility to the closest residential building is approximately 3,500 feet (ft).

BACKGROUND

Regulatory Standards and Health Effects

The project site is in Orange County, California, which is part of the South Coast Air Basin (Basin) and is under the jurisdiction of SCAQMD. Both the State and the federal government have established health-based ambient air quality standards (AAQS) for seven air pollutants. As detailed in Table A, these pollutants include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 10 microns in size (PM_{10}), particulate matter less than 2.5 microns in size ($PM_{2.5}$), and lead. In addition, the State has set standards for sulfates, hydrogen sulfide (H_2S), vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety. Among the pollutants, O_3 and particulate matter ($PM_{2.5}$ and PM_{10}) are considered pollutants with regional effects, while the others have more localized effects.

Table B summarizes the primary health effects and sources of common air pollutants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety (SCAQMD 2016), these health effects would not occur unless the standards are exceeded by a large margin or for a prolonged period of time.

The California Clean Air Act (CCAA) provides SCAQMD and other air districts with the authority to manage transportation activities at indirect sources. Indirect sources of pollution include any facility, building, structure, or installation, or combination thereof, that attracts or generates mobile source activity that results in emissions of any pollutant. In addition, the local air districts also manage area source emissions that are generated when minor sources collectively emit a substantial amount of pollution (e.g., motor vehicles at an intersection, a mall, and on highways). SCAQMD also regulates stationary sources of pollution throughout its jurisdictional area. Direct emissions from motor vehicles are regulated by the California Air Resources Board (CARB) and the United States Environmental Protection Agency (EPA).

Table A: Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)[8]	1-Hour	0.09 ppm (180 $\mu g/m^3$)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.070 ppm (137 $\mu g/m^3$)		0.070 ppm (137 $\mu g/m^3$)		
Respirable Particulate Matter (PM_{10})[9]	24-Hour	50 $\mu g/m^3$	Gravimetric or Beta Attenuation	150 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 $\mu g/m^3$		—		
Fine Particulate Matter ($PM_{2.5}$)[9]	24-Hour	—	—	35 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 $\mu g/m^3$	Gravimetric or Beta Attenuation	12.0 $\mu g/m^3$	15 $\mu g/m^3$	
Carbon Monoxide (CO)	1-Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8-Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[10]	1-Hour	0.18 ppm (339 $\mu g/m^3$)	Gas Phase Chemiluminescence	100 ppb (188 $\mu g/m^3$)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 $\mu g/m^3$)		0.053 ppm (100 $\mu g/m^3$)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (for certain areas)[11]	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	24-Hour	0.04 ppm (105 $\mu g/m^3$)		0.14 ppm (for certain areas)[11]	—	
	3-Hour	—		—	0.5 ppm (1300 $\mu g/m^3$)	
	1-Hour	0.25 ppm (655 $\mu g/m^3$)		75 ppb (196 $\mu g/m^3$)	—	
Lead[12,13]	30-Day Average	1.5 $\mu g/m^3$	Atomic Absorption	—	—	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 $\mu g/m^3$ (for certain areas)[13]	Same as Primary Standard	
	Rolling 3-Month Average[11]	—		0.15 $\mu g/m^3$		
Visibility-Reducing Particles[14]	8-Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24-Hour	25 $\mu g/m^3$	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 $\mu g/m^3$)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24-Hour	0.01 ppm (26 $\mu g/m^3$)	Gas Chromatography			

Source: Ambient Air Quality Standards (CARB 2016a). Website: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf (accessed May 2019).

Footnotes are provided on the following page.

[1] California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility-reducing particles) are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2] National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth-highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the EPA for further clarification and current national policies.

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

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

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

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

[7] Reference method as described by the EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the EPA.

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

[9] On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM_{10} standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

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

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

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

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

[13] The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standards are approved.

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

°C = degrees Celsius
CARB = California Air Resources Board
EPA = United States Environmental Protection Agency
$\mu g/m^3$ = micrograms per cubic meter
mg/m^3 = milligrams per cubic meter
ppm = parts per million
ppb = parts per billion

Table B: Summary of Health Effects of the Major Criteria Air Pollutants

Pollutant	Health Effects	Examples of Sources
Particulate Matter ($PM_{2.5}$ and PM_{10}: less than or equal to 2.5 or 10 microns, respectively)	• Hospitalizations for worsened heart diseases • Emergency room visits for asthma • Premature death	• Cars and trucks (especially diesels) • Fireplaces, wood stoves • Windblown dust from roadways, agriculture, and construction
Ozone (O_3)	• Cough, chest tightness • Difficulty taking a deep breath • Worsened asthma symptoms • Lung inflammation	• Precursor sources[1]: motor vehicles, industrial emissions, and consumer products
Carbon Monoxide (CO)	• Chest pain in heart patients[2] • Headaches, nausea[2] • Reduced mental alertness[2] • Death at very high levels[2]	• Any source that burns fuel, such as cars, trucks, construction and farming equipment, and residential heaters and stoves
Nitrogen Dioxide (NO_2)	• Increased response to allergens	• See carbon monoxide sources
Toxic Air Contaminants	• Cancer • Chronic eye, lung, or skin irritation • Neurological and reproductive disorders	• Cars and trucks (especially diesels) • Industrial sources such as chrome platers • Neighborhood businesses such as dry cleaners and service stations • Building materials and products

Source: CARB Fact Sheet: Air Pollution and Health. Website: http://www.arb.ca.gov/research/health/fs/fs1/fs1.htm (accessed May 2019).

[1] Ozone is not generated directly by these sources. Rather, chemicals emitted by precursor sources such as $PM_{2.5}$ and NO_X react with sunlight to form ozone in the atmosphere.

[2] Health effects from CO exposures occur at levels considerably higher than ambient.

CARB = California Air Resources Board

NO_X = nitrogen oxides

Climate/Meteorology

Air quality in the planning area is not only affected by various emission sources (e.g., mobile and industry), but also by atmospheric conditions (e.g., wind speed, wind direction, temperature, and rainfall). The combination of topography, low mixing height, abundant sunshine, and emissions from the second-largest urban area in the United States gives the Basin some of the worst air pollution in the nation.

The annual average temperature varies little throughout the Basin, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas.

The climatological station closest to the site is the Irvine Ranch station.[1] The monthly average maximum temperature recorded at this station ranged from 69.9°F in January to 90.1°F in August, with an annual average maximum of 78.4°F. The monthly average minimum temperature recorded at this station ranged from 45.3°F in February to 60.0°F in August, with an annual average minimum of 51.8°F. These levels are still representative of the project area.

[1] Western Regional Climate Center. Recent Climate in the West. Website: http://www.wrcc.dri.edu, accessed May 2019.

The majority of annual rainfall in the Basin occurs between November and April. Summer rainfall is minimal and is generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern portion of the Basin and along the coastal side of the mountains. Average monthly rainfall at the Irvine Ranch station varied from 3.11 inches in December to 0.29 inch or less between May and September, with an annual total of 13.05 inches. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

The Basin experiences a persistent temperature inversion (increasing temperature with increasing altitude) as a result of the Pacific high. This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (upper) layer until the inversion layer finally breaks, allowing vertical mixing with the lower layer. This phenomenon is observed in mid-afternoon to late afternoon on hot summer days, when the air appears to clear up suddenly. Winter inversions frequently break by midmorning.

Winds in the project area blow predominantly from the south-southwest, with relatively low velocities. Wind speeds in the project area average about 5 miles per hour (mph). Summer wind speeds average slightly higher than winter wind speeds. Low average wind speeds, together with a persistent temperature inversion, limit the vertical dispersion of air pollutants throughout the Basin. Strong, dry, north or northeasterly winds, known as Santa Ana winds, occur during the fall and winter months, dispersing air contaminants. The Santa Ana conditions tend to last for several days at a time.

The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are the lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly onshore into Riverside and San Bernardino counties. In the winter, the greatest pollution problems are CO and nitrogen oxides (NO_X) because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and brighter sunshine combine to cause a reaction between hydrocarbons and NO_X to form photochemical smog. Smog is a general term that is naturally occurring fog that has become mixed with smoke or pollution. In this context, it is better described as a form of air pollution produced by the photochemical reaction of sunlight with pollutants that have been released into the atmosphere, especially by automotive emissions.

Local Air Quality

SCAQMD, together with the CARB, maintains ambient air quality monitoring stations in the Basin. The air quality monitoring station closest to the project site is the Mission Viejo station, which monitors CO, O_3, PM_{10}, and $PM_{2.5}$. The closest station monitoring NO_2 is the Anaheim station. SO_2 is no longer monitored in the area. The Mission Viejo station is approximately 5.5 miles southeast of the project site and the Anaheim station is approximately 14.5 miles northwest of the project site. The air quality trends from these two stations are used to represent the ambient air quality in the project area. Table C lists the ambient air quality data monitored at these stations within the past 3 years.

Table C: Ambient Air Quality Monitored in the Project Vicinity

Pollutant	Standard	2015	2016	2017
Carbon Monoxide (CO) – Mission Viejo Monitoring Station				
Maximum 1-hour concentration (ppm)		1.4	1.3	1.4
Number of days exceeded:	State: > 20 ppm	0	0	0
	Federal: > 35 ppm	0	0	0
Maximum 8-hour concentration (ppm)		0.7	0.7	0.9
Number of days exceeded:	State: ≥ 9.0 ppm	0	0	0
	Federal: ≥ 9 ppm	0	0	0
Ozone (O_3) – Mission Viejo Monitoring Station				
Maximum 1-hour concentration (ppm)		0.099	0.122	0.103
Number of days exceeded:	State: > 0.09 ppm	2	5	3
Maximum 8-hour concentration (ppm)		0.088	0.093	0.083
Number of days exceeded:	State: > 0.07 ppm	8	13	25
	Federal: > 0.07 ppm	8	13	25
Coarse Particulates (PM_{10}) – Mission Viejo Monitoring Station				
Maximum 24-hour concentration (μg/m^3)		49	59	58
Number of days exceeded:	State: > 50 μg/m^3	0	1	1
	Federal: > 150 μg/m^3	0	0	0
Annual arithmetic average concentration (μg/m^3)		19	21	18
Exceeded for the year:	State: > 20 μg/m^3	No	Yes	No
Fine Particulates ($PM_{2.5}$) – Mission Viejo Monitoring Station				
Maximum 24-hour concentration (μg/m^3)		31.5	24.7	19.5
Number of days exceeded:	Federal: > 35 μg/m^3	0	0	0
Annual arithmetic average concentration (μg/m^3)		7.0	7.3	8.1
Exceeded for the year:	State: > 12 μg/m^3	No	No	No
	Federal: > 15 μg/m^3	No	No	No
Nitrogen Dioxide (NO_2) – Anaheim Monitoring Station				
Maximum 1-hour concentration (ppm)		0.070	0.075	0.086
Number of days exceeded:	State: > 0.18 ppm	0	0	0
	Federal: > 0.10 ppm	0	0	0
Annual arithmetic average concentration (ppm)		0.025	0.023	0.023
Exceeded for the year:	State: > 0.030 ppm	No	No	No
	Federal: > 0.053 ppm	No	No	No

Source 1: United States Environmental Protection Agency (EPA). Air Data Air Quality Monitors. Website: www.epa.gov/airdata/ad_maps.html (accessed May 2019).
Source 2: California Air Resources Board (CARB). iADAM: Air Quality Data Statistics. Website: www.arb.ca.gov/adam/topfour/topfour2.php (accessed May 2019).
μg/m^3 = micrograms per cubic meter
ppm = parts per million

Applicable Regulations and Standards

Federal Agencies, Regulations, and Standards

Pursuant to the federal Clean Air Act (CAA) of 1970, the EPA established the national ambient air quality standards (NAAQS). The NAAQS were established for six major pollutants, termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the federal and State governments have established ambient air quality standards (AAQS), or criteria, for outdoor concentrations in order to protect public health.

The EPA has designated the Southern California Association of Governments (SCAG) as the Metropolitan Planning Organization responsible for ensuring compliance with the requirements of the CAA for the Basin.

The United States has historically had a voluntary approach to reducing GHG emissions. However, on April 2, 2007, the United States Supreme Court ruled that the EPA has the authority to regulate CO_2 emissions under the CAA. On December 7, 2009, the EPA Administrator signed a final action under the CAA, finding that six GHGs (CO_2, methane [CH_4], nitrous oxide [N_2O], hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride [SF_6]) constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to global climate change (GCC).

State Agencies, Regulations, and Standards

In 1967, the State Legislature passed the Mulford-Carrell Act, which combined two Department of Health bureaus (i.e., the Bureau of Air Sanitation and the Motor Vehicle Pollution Control Board) to establish the CARB. Since its formation, the CARB has worked with the public, the business sector, and local governments to find solutions to the State’s air pollution problems.

The California Air Pollution Control Officers Association (CAPCOA) is a nonprofit association of the air pollution control officers from all 35 local air quality agencies throughout California. CAPCOA formed in 1976 to promote clean air and to provide a forum for sharing knowledge, experience, and information among the air quality regulatory agencies around the State. CAPCOA meets regularly with federal and State air quality officials to develop statewide rules and to assure consistent application of rules and regulations. CAPCOA works with specialized task forces (including regulated industry) by participating actively in the legislative process, and continuing to coordinate local efforts with those of the State and federal air agencies. The goal is to protect public health while maintaining economic vitality.

California adopted the CCAA in 1988. The CARB administers the California ambient air quality standards (CAAQS) for the 10 air pollutants designated in the CCAA. These 10 State air pollutants are the 6 criteria pollutants designated by the federal CAA as well as 4 others: visibility-reducing particulates, H_2S, sulfates, and vinyl chloride.

Air Pollution Constituents and Attainment Status

The CARB coordinates and oversees both State and federal air pollution control programs in the State. The CARB oversees activities of local air quality management agencies and maintains air quality monitoring stations throughout the State in conjunction with the EPA and local air districts. The CARB has divided the State into 15 air basins based on meteorological and topographical factors of air pollution. Data collected at these stations are used by the CARB and the EPA to classify air basins as attainment, nonattainment, nonattainment-transitional, or unclassified, based on air quality data for the most recent 3 calendar years compared with the AAQS.

Attainment areas may be:

- Attainment/unclassified ("unclassifiable" in some lists), which have never violated the air quality standard of interest or do not have enough monitoring data to establish attainment or nonattainment status;

- Attainment-maintenance (NAAQS only), which violated a NAAQS that is currently in use (was nonattainment) in or after 1990, but now attains the standard and is officially redesignated as attainment by the EPA with a maintenance State Implementation Plan (SIP); or

- Attainment (usually only for CAAQS, but sometimes for NAAQS) that have adequate monitoring data to show attainment, have never been nonattainment, or, for NAAQS, have completed the official maintenance period.

Nonattainment areas are imposed with additional restrictions as required by the EPA. The air quality data are also used to monitor progress in attaining air quality standards. Table D lists the attainment status for the criteria pollutants in the Basin.

Table D: Attainment Status of Criteria Pollutants in the South Coast Air Basin

Pollutant	State	Federal
O_3 1-hour	Nonattainment	N/A
O_3 8-hour	Nonattainment	Extreme Nonattainment[1]
PM_{10}	Nonattainment	Attainment/Maintenance
$PM_{2.5}$	Nonattainment	Serious Nonattainment
CO	Attainment	Attainment/Maintenance
NO_2	Attainment	Unclassified/Attainment (1-hour) Attainment/Maintenance (Annual)
SO_2	Attainment	Unclassified/Attainment
Lead	Attainment[2]	Unclassified/Attainment[2]
All Others[3]	Attainment/Unclassified	Attainment/Unclassified

Source 1: South Coast Air Quality Management District. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) Attainment Status for South Coast Air Basin. Website: www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf (accessed May 2019).
Source 2: United States Environmental Protection Agency. Nonattainment Areas for Criteria Pollutants (Green Book). Website: https://www.epa.gov/green-book (accessed May 2019).
[1] Area has a design value of 0.175 ppm and above.
[2] The Los Angeles County portion of the Basin is in Nonattainment for lead.
[3] "All Others" includes the criteria pollutant not specifically listed, such as sulfates and vinyl chloride.

CO = carbon monoxide
N/A = not applicable
NO_2 = nitrogen dioxide
O_3 = ozone
PM_{10} = particulate matter less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
ppm = parts per million
SO_2 = sulfur dioxide

Ozone

O_3 is formed by photochemical reactions between NO_X and volatile organic compounds (VOCs) rather than being directly emitted. O_3 is a pungent, colorless gas that is a major component of Southern California smog. Elevated O_3 concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors (e.g., the sick, the elderly, and young children). O_3 levels peak during summer and early fall. The entire Basin is designated as a nonattainment area for the State 1-hour and 8-hour O_3 standards. The EPA has officially designated the status for most of the Basin regarding the 8-hour O_3 standard as "extreme nonattainment," which means the Basin has until 2024 to attain the federal 8-hour O_3 standard.

Carbon Monoxide

CO is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. CO is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. The entire Basin is in attainment for the State standards for CO. The Basin is designated as an "attainment/maintenance" area under the federal CO standards.

Nitrogen Oxides

NO_2, a reddish brown gas, and nitric oxide (NO), a colorless, odorless gas, form from fuel combustion under high temperature or pressure. These compounds are referred to as nitrogen oxides, or NO_X. NO_X is a primary component of the photochemical smog reaction. NO_X also contributes to other pollution problems, including a high concentration of fine particulate matter ($PM_{2.5}$), poor visibility, and acid deposition (i.e., acid rain). NO_x decreases lung function and may reduce resistance to infection. The entire Basin is designated as attainment for the State NO_2 standard and as an "attainment/maintenance" area under the federal NO_2 standard.

Sulfur Dioxide

SO_2 is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight. The entire Basin is in attainment with both federal and State SO_2 standards.

Lead

Lead is found in old paints and coatings, plumbing, and a variety of other materials. Once in the bloodstream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead. The entire Basin is in attainment with both federal and State lead standards, except in Los Angeles County.

Particulate Matter

Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles (PM_{10}) derive from a variety of sources, including windblown dust and grinding operations. Fuel combustion and resultant exhaust from power plants and diesel buses and trucks are primarily responsible for $PM_{2.5}$ levels. Fine particles can also be formed in the atmosphere through chemical reactions. PM_{10} can accumulate in the respiratory system and aggravate health problems (e.g., asthma). The EPA's scientific review concluded that $PM_{2.5}$, which penetrates deeply into the lungs, is more likely than PM_{10} to contribute to the health effects listed in a number of recently published community epidemiological studies at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily among the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease [e.g., asthma]); decreased lung function (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms. The Basin is designated nonattainment for the federal and

State $PM_{2.5}$ standards and State PM_{10} standard, and attainment/maintenance for the federal PM_{10} standard.

Volatile Organic Compounds

VOCs (also known as reactive organic gases and reactive organic compounds) form from the combustion of fuels and the evaporation of organic solvents. VOCs are not defined as criteria pollutants, however, because VOCs accumulate in the atmosphere more quickly during the winter, when sunlight is limited and photochemical reactions are slower, they are a prime component of the photochemical smog reaction. There are no attainment designations for VOCs.

Sulfates

Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently is converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of the State due to regional meteorological features. The entire Basin is in attainment for the State standard for sulfates.

Hydrogen Sulfide

H_2S is a colorless gas with the odor of rotten eggs. H_2S forms during bacterial decomposition of sulfur-containing organic substances. In addition, H_2S can be present in sewer gas and some natural gas and can be emitted as the result of geothermal energy exploitation. In 1984, a CARB committee concluded that the ambient standard for H_2S is adequate to protect public health and to significantly reduce odor annoyance. The entire Basin is unclassified for the State standard for H_2S.

Visibility-Reducing Particles

Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size, and chemical composition, and can be made up of many different materials (e.g., metals, soot, soil, dust, and salt). The statewide standard is intended to limit the frequency and severity of visibility impairment due to regional haze. The entire Basin is unclassified for the State standard for visibility-reducing particles.

Regional Air Quality Improvement

Criteria Pollutants

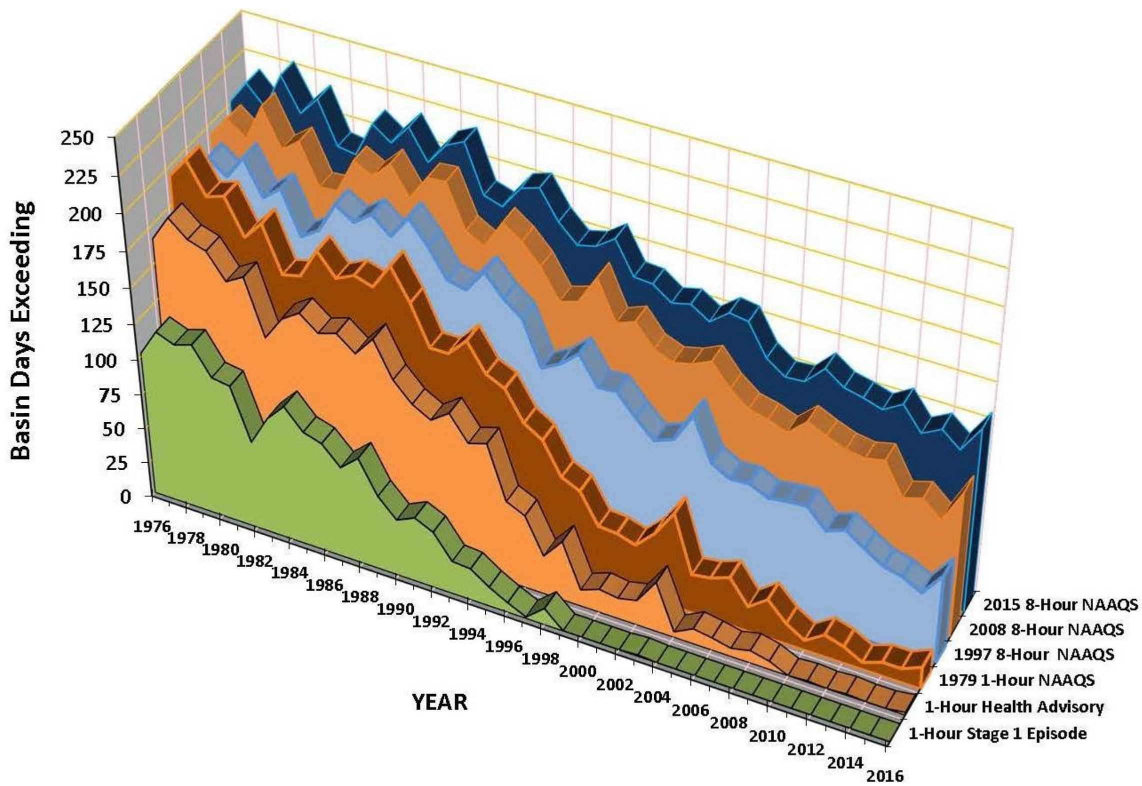
As previously discussed, the project is under the jurisdiction of the SCAQMD, which is responsible for formulating and implementing the Air Quality Management Plan (AQMP) for the Basin in order to bring the area into compliance with federal and State air quality standards. Air quality in the Basin has improved as a result of the development of SCAQMD rules and control programs and the development and application of cleaner technology. O_3, NO_X, VOCs, and CO have been generally decreasing since 1975. The levels of PM_{10} and $PM_{2.5}$ in the air have decreased since 1975, and direct emissions of $PM_{2.5}$ have decreased, although direct emissions of PM_{10} have shown little change. Figure 3 shows the O_3 trend in the Basin.

Toxic Air Contaminant Trends

In 1984, CARB adopted regulations to reduce toxic air contaminant (TAC) emissions from mobile and stationary sources, and consumer products. A CARB study showed that ambient concentrations and emissions of the seven TACs responsible for the most cancer risk from airborne exposure have declined by 76 percent between 1990 and 2012 (Propper et al., 2015). Concentrations of diesel particulate matter, the most important TAC, have declined by 68 percent between 1990 and 2012, despite a 31 percent increase in the State's population and an 81 percent increase in diesel vehicle miles traveled (VMT), as shown on Figure 4. The study also found that the significant reductions in cancer risk to California residents from the implementation of air toxics controls are likely to continue.

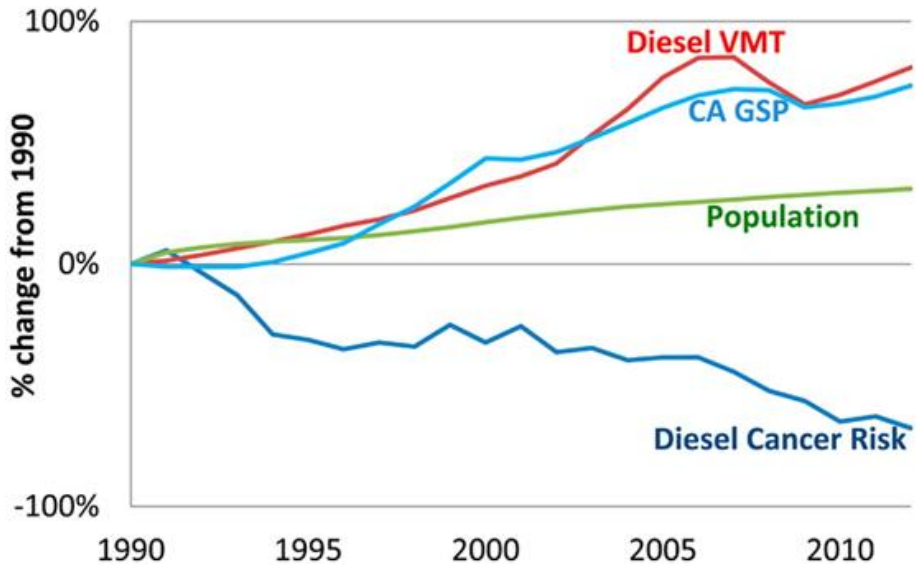
Cancer Risk Trends

According to CARB, cancer risk in the Basin has declined since 1990. The SCAQMD study *Multiple Air Toxics Exposure Study in the South Coast Air Basin* (MATES-IV) (SCAQMD 2015b) showed a decrease in cancer risk of more than 55 percent since MATES-III was published in 2005.



Source: South Coast Air Quality Management District (SCAQMD). Website: http://www.aqmd.gov/docs/default-source/air-quality/south-coast-air-basin-smog-trend-ozone-chart.pdf (accessed May 2019)

Figure 3: South Coast Air Basin Ozone Trend



Source: Propper et al. Website: https://pubs.acs.org/doi/full/10.1021/acs.est.5b02766 (accessed May 2019).

Figure 4: California Population, Gross State Product (GSP), Diesel Cancer Risk, Diesel Vehicle Miles Traveled (VMT)

Regional Air Quality Planning Framework

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

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

Regional Air Quality Management Plan

SCAQMD and SCAG are responsible for formulating and implementing the AQMP for the Basin. The main purpose of an AQMP is to bring the area into compliance with federal and State air quality standards. SCAQMD prepares a new AQMP every 3 years, updating the previous plan and the 20-year horizon.

The latest plan is the 2016 AQMP, which incorporates the latest scientific and technological information and planning assumptions, including the 2016 Regional Transportation Plan/Sustainable Communities Strategy and updated emission inventory methodologies for various source categories. The 2016 AQMP included the integrated strategies and measures needed to meet the NAAQS, implementation of new technology measures, and demonstrations of attainment of the 1-hour and 8-hour O_3 NAAQS as well as the latest 24-hour and annual $PM_{2.5}$ standards. Key elements of the 2016 AQMP include:

- Calculation and credit for co-benefits from other planning efforts (e.g., climate, energy, and transportation)

- A strategy with fair-share emission reductions at the federal, State, and local levels
- Investment in strategies and technologies meeting multiple air quality objectives
- Identification of new partnerships and significant funding for incentives to accelerate deployment of zero and near-zero technologies
- Enhanced socioeconomic assessment, including an expanded environmental justice analysis
- Attainment of the 24-hour $PM_{2.5}$ standard in 2019 with no additional measures
- Attainment of the annual $PM_{2.5}$ standard by 2025 with implementation of a portion of the O_3 strategy
- Attainment of the 1-hour O_3 standard by 2022 with no reliance on "black box" future technology (CAA Section 182(e)(5) measures)

Description of Global Climate Change and its Sources

The climate of a city or region is its typical or average weather. For example, Southern California's climate is sunny and warm. Earth's climate is the average of all the world's regional climates. Climate change, therefore, is a change in the typical or average weather of a region. This could be a change in a region's average annual rainfall, for example. Alternatively, it could be a change in a region's average temperature for a given month or season. GCC is a change in the Earth's overall climate. This could be a change in the Earth's average temperature, for example. Alternatively, it could be a change in the Earth's typical precipitation patterns. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures.

Climate change refers to any change in measures of weather (e.g., temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from natural factors (e.g., changes in the sun's intensity), natural processes within the climate system (e.g., changes in ocean circulation), or human activities (e.g., the burning of fossil fuels, land clearing, or agriculture). The primary observed effect of GCC has been a rise in the average global tropospheric[1] temperature of 0.36°F per decade, determined from meteorological measurements worldwide between 1990 and 2016. Climate change modeling shows that further warming may occur, which may induce additional changes in the global climate system. Changes to the global climate system, ecosystems, and the environment could include higher sea levels, drier or wetter weather, changes in ocean salinity, changes in wind patterns, or more energetic aspects of extreme weather including droughts, heavy precipitation, heat waves, extreme cold, and increased intensity of tropical cyclones. Specific effects in the State might include a decline in the Sierra Nevada snowpack, erosion of the State's coastline, and seawater intrusion in the Sacramento-San Joaquin River Delta.

[1] The troposphere is the zone of the atmosphere characterized by water vapor, weather, winds, and decreasing temperature with increasing altitude.

Each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850 (IPCC 2013). The latest projections indicate that temperatures in the project region averaged 72.9°F from 1961 to 1990 and are expected to average 77.2°F between 2018 and the end of the century (California Climate Change Research 2018). The prevailing scientific opinion on climate change is that "most of the warming observed over the last 60 years is attributable to human activities" (IPCC 2013). Increased amounts of carbon dioxide (CO_2) and other GHGs are the primary causes of the human-induced component of warming. The observed warming effect associated with the presence of GHGs in the atmosphere (from either natural or human sources) is often referred to as "the greenhouse effect."[1]

GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced GCC are:[2]

- CO_2
- CH_4
- N_2O
- HFCs
- PFCs
- SF_6

Over the last 200 years, human activities have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere and enhancing the natural greenhouse effect. Although GHGs produced by human activities include naturally occurring GHGs (e.g., CO_2, CH_4, and N_2O), some gases (e.g., HFCs, PFCs, and SF_6) are completely new to the atmosphere. Certain other GHGs (e.g., water vapor) are short-lived in the atmosphere compared to these six GHGs, which remain in the atmosphere for significant periods of time and contribute to climate change in the long term. Water vapor is also generally excluded from the list of GHGs because its atmospheric concentrations are largely determined by natural processes (e.g., oceanic evaporation). For the purposes of this report, the term "GHGs" will refer collectively to the six gases identified in the bulleted list provided above. The following discussion summarizes the characteristics of these six primary GHGs.

Carbon Dioxide

In the atmosphere, carbon generally exists in its oxidized form, as CO_2. Natural sources of CO_2 include the respiration (breathing) of humans and animals, volcanic outgassing, decomposition of organic matter, and evaporation from the oceans. Human-caused sources of CO_2 include the combustion of fossil fuels and wood, waste incineration, and mineral production. The Earth maintains a natural carbon balance, and when concentrations of CO_2 are altered, the system

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1 The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse allows heat from sunlight in and reduces the amount of heat that escapes, GHGs such as CO_2 in the atmosphere keep the Earth at a relatively even temperature. Without the greenhouse effect, the Earth would be a frozen globe; thus, the *naturally occurring* greenhouse effect is necessary to keep our planet at a comfortable temperature.

2 The GHGs listed are consistent with the definition in Assembly Bill 32 (Government Code 38505), as discussed later in this report.

gradually returns to its natural state through natural processes. Natural changes to the carbon cycle work slowly, especially compared to the rapid rate at which humans are adding CO_2 to the atmosphere. Natural removal processes (e.g., photosynthesis by land- and ocean-dwelling plant species) cannot keep pace with this extra input of human-made CO_2, particularly due to deforestation; consequently, the gas is building up in the atmosphere. The concentration of CO_2 in the atmosphere has risen approximately 30 percent since the late 1800s (CalEPA 2010).

Methane

CH_4 is produced when organic matter decomposes in environments lacking sufficient oxygen (CO_2 is produced when there is sufficient oxygen). Natural sources of CH_4 include fires, geologic processes, and bacteria that produce CH_4 in a variety of settings (most notably, wetlands) (EPA 2010). Anthropogenic sources include rice cultivation, livestock, landfills and waste treatment, biomass burning, and fossil fuel combustion (e.g., the burning of coal, oil, and natural gas). As with CO_2, the major removal process of atmospheric CH_4—a chemical breakdown in the atmosphere—cannot keep pace with source emissions, and CH_4 concentrations in the atmosphere are increasing.

Nitrous Oxide

N_2O is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for the majority of natural source emissions. N_2O is also a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion sources emit N_2O. The quantity of N_2O emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of human-generated N_2O emissions in the State.

Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride

HFCs are primarily used as substitutes for O_3-depleting substances regulated under the Montreal Protocol.[1] PFCs and SF_6 are emitted from various industrial processes, including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. There is no aluminum or magnesium production in the State; however, the semiconductor industry, which is active in the State, has led to greater use of PFCs. However, there are no known project-related emissions of these three GHGs; therefore, these substances are not discussed further in this analysis.

These GHGs vary considerably in terms of global warming potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. GWP is based on several factors, including the relative effectiveness of a gas in absorbing infrared radiation and the length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to CO_2, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically

1 The Montreal Protocol is an international treaty that was approved on January 1, 1989, and was designated to protect the O_3 layer by phasing out the production of several groups of halogenated hydrocarbons that are believed to be responsible for O_3 depletion and are also potent GHGs.

measured in terms of metric tons[1] of "CO_2 equivalents" (MT CO_2e). For example, N_2O is from 265 to 298 times more potent at contributing to global warming than CO_2. Table E identifies the GWP for each GHG analyzed in this report. The EPA and the CARB use GWP values from the 2007 Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report.

Table E: Global Warming Potential for Selected Greenhouse Gases

Pollutant	Lifetime (Years)	Global Warming Potential (100-year)[1]
Carbon Dioxide (CO_2)	~100[2]	1
Methane (CH_4)	12	25–34
Nitrous Oxide (N_2O)	121	265–298

Sources: California's 2017 Climate Change Scoping Plan (CARB 2017) and IPCC.

1 The 100-year global warming potential estimates are from Section 8.7.1.2 of The Global Warming Potential Concept in the IPCC 2013 Fifth Assessment Report (AR5) (Website: https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter08_FINAL.pdf) and Section 2.10.2 of The Direct Global Warming Potentials in the IPCC 2007 Fourth Assessment Report (AR4) (Website: https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html) (both accessed May 2019). The EPA and CARB use GWP values from the 2007 IPCC Fourth Assessment Report (AR4).

2 CO_2 has a variable atmospheric lifetime and cannot be readily approximated as a single number.

CARB = California Air Resources Board
EPA = United States Environmental Protection Agency
GWP = global warming potential
IPCC = Intergovernmental Panel on Climate Change

Emissions Sources and Inventories

An emissions inventory that identifies and quantifies the primary human-generated sources and sinks of GHGs is a well-recognized and useful tool for addressing climate change. This section summarizes the latest information on national, State, and local GHG emission inventories. However, because GHGs persist for a long time in the atmosphere (Table C), accumulate over time, and are generally well mixed, their impact on the atmosphere and climate cannot be tied to a specific point of emission.

United States Emissions. In 2017, the United States emitted approximately 6.5 billion MT CO_2e. Total United States emissions increased by 1.6 percent from 1990 to 2017, and emissions decreased from 2016 to 2017 by 0.3 percent. The decrease in total GHG emissions between 2016 and 2017 was driven in part by a decrease in CO_2 emissions from fossil fuel combustion. The decrease in CO_2 emissions from fossil fuel combustion was a result of multiple factors, including a continued shift from coal to natural gas, increased use of renewables in the electric power sector, and milder weather that contributed to less overall electricity use. Relative to 1990, the baseline for this inventory, gross emissions in 2017 are higher by 1.6 percent, down from a high of 15.7 percent above 1990 levels in 2007. Overall, net emissions in 2017 were 12.7 percent below 2005 levels (EPA 2019).

State of California Emissions. According to CARB emission inventory estimates, the State emitted 429.4 million metric tons of CO_2e (MMT CO_2e) in 2016. This is a decrease of 12 MMT CO_2e from 2015. This puts total emissions just below the 2020 target of 431 MMT CO_2e (CARB 2018).

The CARB estimates that transportation was the source of approximately 41 percent of the State's GHG emissions in 2016, followed by industrial sources at 23 percent and electricity generation (from

1 A metric ton is equivalent to 1.1 tons.

in State and out) at 16 percent. The remaining sources of GHG emissions were residential at 7 percent, commercial activities at 5 percent, agriculture at 8 percent, and other sources at less than 1 percent (CARB 2018).

California Climate Action Milestones

In 1988, Assembly Bill (AB) 4420 directed the California Energy Commission (CEC) to report on "how global warming trends may affect the State's energy supply and demand, economy, environment, agriculture, and water supplies" and to offer "recommendations for avoiding, reducing and addressing the impacts." This marked the first statutory direction to a State agency to address climate change.

The California Climate Action Registry was created to encourage voluntary reporting and early reductions of GHG emissions with the adoption of Senate Bill (SB) 1771 in 2000. The CEC was directed to assist by developing metrics and identifying and qualifying third-party organizations to provide technical assistance and advice to GHG emission reporters. The next year, SB 527 amended SB 1771 to emphasize third-party verification.

SB 1771 also contained several additional requirements for the CEC, including (1) updating the State's GHG inventory from an existing 1998 report and continuing to update it every 5 years; (2) acquiring, developing, and distributing information on GCC to agencies and businesses; (3) establishing a State interagency task force to ensure policy coordination; and (4) establishing a climate change advisory committee to make recommendations on the most equitable and efficient ways to implement GCC requirements. In 2006, AB 1803 transferred preparation of the inventory from the CEC to the CARB. The CARB updates the inventory annually.

AB 1493, authored by Assembly member Fran Pavley in 2002, directed the CARB to adopt regulations to achieve the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles. The so-called "Pavley" regulations, or Clean Car regulations, were approved by the CARB in 2004. On September 24, 2009, the CARB adopted amendments to AB 1493 that reduced GHG emissions in new passenger vehicles from 2009 through 2016. AB 1493 also directed the State's Climate Action Registry to adopt protocols for reporting reductions in GHG emissions from mobile sources prior to the operative date of the regulations.

Executive Order (EO) S-3-05 (June 2005) established GHG targets for the State (e.g., returning to year 2000 emission levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050). EO S-3-05 directed the Secretary of the California Environmental Protection Agency to coordinate efforts to meet the targets with the heads of other State agencies. This group became the Climate Action Team.

In 2006, the State Legislature passed the California Global Warming Solutions Act of 2006 (AB 32), which created a comprehensive, multiyear program to reduce GHG emissions in California. AB 32 required the CARB to develop a Scoping Plan that describes the approach California will take to reduce GHGs to achieve the goal of reducing emissions to 1990 levels by 2020. The Scoping Plan was first approved by the CARB in 2008, updated on May 22, 2014, and again on December 14, 2017. In 2016, the State Legislature passed SB 32, which codifies a 2030 GHG emissions reduction target of 40 percent below 1990 levels. With SB 32, the State Legislature passed companion legislation AB

197, which provides additional direction for developing the Scoping Plan. The 2017 Scoping Plan update incorporates the 2030 target set by EO B-30-15 and codified by SB 32.

The governors of California, Arizona, New Mexico, Oregon, and Washington entered into a Memorandum of Understanding in February 2007 establishing the Western Climate Initiative. The governors agreed to set a regional goal for emissions reductions consistent with state-by-state goals; develop a design for a regional market-based multisector mechanism to achieve the goals; and participate in a multistate GHG registry. The initiative has since grown to include Montana, Utah, and the Canadian provinces of British Columbia, Manitoba, Ontario, and Québec.

California is implementing the world's first Low Carbon Fuel Standard for transportation fuels, pursuant to both EO S-01-07 (signed January 2007) and AB 32. The standard requires a reduction of at least 10 percent in the CO intensity of the State's transportation fuels by 2020. This reduction is expected to reduce GHG emissions in 2020 by 17.6 MMT CO_2e. Also in 2007, AB 118 created the Alternative and Renewable Fuel and Vehicle Technology Program. The CEC and the CARB administer the program. This act provides funding for alternative fuel and vehicle technology research, development, and deployment in order to attain the State's climate change goals, achieve the State's petroleum reduction objectives and clean air and GHG emission reduction standards, develop public-private partnerships, and ensure a secure and reliable fuel supply.

In addition to vehicle emissions regulations and the Low Carbon Fuel Standard, the third effort to reduce GHG emissions from transportation is the reduction in the demand for personal vehicle travel (i.e., VMT). This measure was addressed in September 2008 through the Sustainable Communities and Climate Protection Act of 2008, or SB 375. The enactment of SB 375 initiated an important new regional land use planning process to mitigate GHG emissions by integrating and aligning planning for housing, land use, and transportation for California's 18 Metropolitan Planning Organizations. The bill directed the CARB to set regional GHG emission reduction targets for most areas of the State. SB 375 also contained important elements related to federally mandated regional transportation plans and the alignment of State transportation and housing planning processes.

Also codified in 2008, SB 97 required the Governor's Office of Planning and Research to develop GHG emissions criteria for use in determining project impacts under the California Environmental Quality Act (CEQA). These criteria were developed in 2009 and went into effect in 2010.

EO S-13-08 launched a major initiative for improving the State's adaptation to climate impacts from sea level rise, increased temperatures, shifting precipitation, and extreme weather events. EO S-13-08 ordered a California Sea Level Rise Assessment Report request from the National Academy of Sciences. The order also ordered the development of a Climate Adaptation Strategy. The strategy, published in December 2009, assesses the State's vulnerability to climate change impacts, and outlines possible solutions that can be implemented within and across State agencies to promote resiliency. The Strategy focused on seven areas: public health, biodiversity and habitat, ocean and coastal resources, water management, agriculture, forestry, and transportation and energy infrastructure.

The initiatives, EOs, and statutes outlined above comprise the major milestones in California's efforts to address climate change through coordinated action on climate research, GHG mitigation, and climate change adaptation. Numerous other related efforts have been undertaken by State agencies and departments to address specific questions and programmatic needs. The Climate Action Team coordinates these efforts and others, which comprise the California Climate Adaptation Strategy (State of California 2018).

On September 10, 2018, Governor Brown signed SB 100. This bill sets a goal of achieving 100-percent clean electricity in the State by 2045. SB 100 advances the State's existing Renewables Portfolio Standard, which establishes how much of the electricity system should be powered from renewable energy resources, to 50 percent by 2025 and 60 percent by 2030.

THRESHOLDS OF SIGNIFICANCE

Certain air districts (e.g., SCAQMD) have created guidelines and requirements to conduct air quality analysis. This assessment of air quality and GCC impacts for the proposed project follows SCAQMD's current guidelines, the *CEQA Air Quality Handbook* (SCAQMD 1993) with associated updates.

Based on the Guidelines for the Implementation of CEQA, Appendix G, Public Resources Code Sections 15000–15387, a project would normally be considered to have a significant effect on air quality if the project would violate any CAAQS, contribute substantially to an existing air quality violation, expose sensitive receptors to substantial pollutant concentrations, or conflict with adopted environmental plans and goals of the community in which it is located.

Pollutants with Regional Effects

SCAQMD has established daily emissions thresholds for construction and operation of a proposed project in the Basin. The emissions thresholds were established based on the attainment status of the Basin with regard to air quality standards for specific criteria pollutants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety (SCAQMD 2016), these emissions thresholds are regarded as conservative and would overstate an individual project's contribution to health risks.

Regional Emissions Thresholds

Table F lists the CEQA significance thresholds for construction and operational emissions established for the Basin.

Table F: Regional Thresholds for Construction and Operational Emissions

Emissions Source	Pollutant Emissions Threshold (lbs/day)					
	VOC	NO_x	CO	PM_{10}	$PM_{2.5}$	SO_x
Construction	75	100	550	150	55	150
Operations	55	55	550	150	55	150

Source: South Coast Air Quality Management District (SCAQMD). 2015a. Air Quality Significance Thresholds. Website: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf (accessed May 2019).

CO = carbon monoxide
lbs/day = pounds per day
NOx = nitrogen oxides
PM_{10} = particulate matter less than 10 microns in size
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
SO_X = sulfur oxides
VOC = volatile organic compounds

Projects in the Basin with construction- or operation-related emissions that exceed any of their respective emission thresholds would be considered significant under SCAQMD guidelines. These thresholds, which SCAQMD developed and that apply throughout the Basin, apply as both project and cumulative thresholds. If a project exceeds these standards, it is considered to have a project-specific and cumulative impact.

Local Microscale Concentration Standards. The significance of localized project impacts under CEQA depends on whether ambient CO levels in the vicinity of the project are above or below State and federal CO standards. Because ambient CO levels are below the standards throughout the Basin, a project would be considered to have a significant CO impact if project emissions result in an exceedance of one or more of the 1-hour or 8-hour standards. The following are applicable local emission concentration standards for CO:

- California State 1-hour CO standard of 20 parts per million (ppm)
- California State 8-hour CO standard of 9 ppm

Localized Impacts Analysis

SCAQMD published its *Final Localized Significance Threshold Methodology* in June 2003 and updated it in July 2008 (SCAQMD 2008), recommending that all air quality analyses include an assessment of both construction and operational impacts on the air quality of nearby sensitive receptors. Localized significance thresholds (LSTs) represent the maximum emissions from a project site of up to 5 acres that are not expected to result in an exceedance of the NAAQS or CAAQS for CO, NO_2, PM_{10} and $PM_{2.5}$, as shown in Table A. LSTs are based on the ambient concentrations of that pollutant within the project Source Receptor Area (SRA) and the distance to the nearest sensitive receptor. For this project, the appropriate SRA is the Central Orange County Coastal area (SRA 20). Sensitive receptors include residences, schools, hospitals, and similar uses that are sensitive to adverse air quality. As described above, there are existing sensitive receptors approximately 3,500 ft from the edge of the project site. Commercial and industrial facilities are not included in the definition of a 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 8 hours.

Because the averaging period for the State PM_{10} and $PM_{2.5}$ standards is 24 hours, employees could not be exposed to these pollutants long enough for them to be included in the LST analysis for these two pollutants. However, the averaging period for CO and NO_X is 1 hour; thus, employees could be exposed to these pollutants for long enough to be included in the LST analysis for these two pollutants.

There are workers in adjacent light industrial uses who are approximately 3,000 ft from the edge of the project site. Using the LSTs for receptors at the maximum distance of 500 meters (1,640 ft) for NO_X, CO, PM_{10}, and $PM_{2.5}$ would result in a conservative analysis. If the total acreage disturbed is less than or equal to 5 acres per day, then SCAQMD's screening look-up tables can be used to determine if a project has the potential to result in a significant impact. While this project site is approximately 25 acres, based on the California Emissions Estimator Model (CalEEMod) methodology (CAPCOA

2017) and the construction equipment planned, no more than 3 acres[1] would be disturbed on any single day. Thus, the 2-acre and 5 acre LSTs have been interpolated to derive 3-acre thresholds for construction emissions.

On-site operational emissions would occur from stationary and mobile sources. On-site vehicle emissions are the largest source of emissions, and the on-site travel routes for the proposed project would be equivalent to driving over 5 acres of surface area. Therefore, the 5-acre thresholds would apply during project operations. Table G lists the emissions thresholds that would apply during project construction and operation.

Table G: SCAQMD LSTs (lbs/day)

Emissions Source Category	NO_X	CO	PM_{10}	$PM_{2.5}$
	500-Meter (1,640-foot) Distance			
Construction (3 acres)	249	8,086	152	89
Operations (5 acres)	278	9,272	41	25

Source: South Coast Air Quality Management District (SCAQMD). 2008 Final Localized Significance Threshold Methodology.
Note: Assumes Source Receptor Area (SRA) 20 for Central Orange County Coastal area.
CO = carbon monoxide
lbs/day = pounds per day
LST = localized significance threshold
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size

Global Climate Change

State CEQA Guidelines Section 15064(b) provides that the "determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data," and further, states that an "ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

Appendix G of the CEQA Guidelines includes significance thresholds for GHG emissions. A project would normally have a significant effect on the environment if it would:

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

Currently, there is no Statewide GHG emissions threshold that has been used to determine the potential GHG emissions impacts of a project. Threshold methodology and thresholds are still being developed and revised by air districts in the State.

To provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents, SCAQMD convened a GHG CEQA Significance Threshold Stakeholder Working

[1] A maximum disturbance of 3 acres would take place during the grading phase from the use of one excavator, one scraper, and three rubber-tired dozers for 8 hours per day.

Group. This Working Group proposed a tiered approach for evaluating GHG emissions for development projects where SCAQMD is not the lead agency. The applicable tier for this project is Tier 2; if the project GHG emissions are consistent with a qualified GHG reduction plan that is part of a local general plan, then the project GHG emissions would be less than significant.

Energy

State CEQA Guidelines Section 15064(b)(1) provides that the "determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data," and further states that an "ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

A project would normally have a significant energy effect on the environment if it would:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or

- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

IMPACTS AND MITIGATION

Air pollutant emissions associated with the project would occur over the short term from construction activities and over the long term from project-related vehicular trips and due to composting operations of the proposed project.

Construction Impacts

Equipment Exhaust and Related Construction Activities

Construction activities produce combustion emissions from various sources (utility engines, tenant improvements, and motor vehicles transporting the construction crew). Exhaust emissions from construction activities envisioned on site would vary daily as construction activity levels change. The use of construction equipment on site would result in localized exhaust emissions.

The construction analysis includes estimating the construction equipment that would be used during each construction activity, the hours of use for that construction equipment, the quantities of earth and debris to be moved, and on-road vehicle trips (worker, soil hauling, and vendor trips). The most recent version of CalEEMod (Version 2016.3.2) was used. The construction activities and off-road equipment list were provided by the project developer, and CalEEMod defaults were assumed for the worker and vendor trips fleet mix and trip lengths. As estimated by the project applicant, a total of 1,100 hauling trips would be needed during the All Work and Miscellaneous phase to deliver asphalt from off-site. The hauling trips would be approximately 18 miles. Table H lists the tentative project construction phasing for the proposed project. It is expected that construction would take approximately 2 months. The project applicant estimated the construction phase durations.

The construction equipment inventory was provided by the project applicant and CalEEMod was used to calculate the construction emissions. Table I lists the estimated construction equipment that would be used during project construction.

Table H: Project Construction Phasing

Phase Name	Number of Days
Fine Grade Pad, including Asphalt Grindings	10
Berm and Retention Basin Building	10
Water Line Installation	20
Electrical Line Installation	10
All Work and Miscellaneous	30

Source: Estimated by project applicant (2019).

Table I: Diesel Construction Equipment Used by Construction Phase

Construction Phase	Off-Road Equipment Type	Off-Road Equipment Unit Amount	Hours Used per Day	Horsepower	Load Factor
Fine Grade Pad, including Asphalt Grindings	Rubber-Tired Dozers	1	4	247	0.40
	Rubber-Tired Dozers	1	8	247	0.40
	Rubber-Tired Dozers	1	4	247	0.40
	Scrapers	1	4	367	0.48
	Excavators	1	4	158	0.38
	Off-Highway Trucks	3	4	402	0.38
Berm and Retention Basin Building	Rubber-Tired Dozers	1	4	247	0.40
	Rubber-Tired Dozers	1	8	247	0.40
	Forklifts	1	8	89	0.20
Water Line Installation	Forklifts	1	8	89	0.20
	Excavators	1	6	158	0.38
	Rubber-Tired Dozers	1	2	247	0.40
	Off-Highway Trucks	1	8	402	0.38
Electrical Line Installation	Aerial Lifts	1	8	63	0.31
	Off-Highway Trucks	1	8	402	0.38
All Work and Miscellaneous	Off-Highway Trucks	2	8	402	0.38

Source: Compiled by LSA Associates, Inc. using information provided by developer and CalEEMod defaults (May 2019)
CalEEMod = California Emission Estimator Model

The emissions rates shown in Table J are from the CalEEMod output tables listed as "Mitigated Construction," even though the only measures that have been applied to the analysis are the required construction emissions control measures, or standard conditions. They are also the combination of the on- and off-site emissions. No exceedances of any criteria pollutants are expected. Required construction emissions control measures are documented in the CalEEMod output included in the attachment of this memorandum.

Fugitive Dust

Fugitive dust emissions are generally associated with land clearing and exposure of soils to the air and wind, as well as cut-and-fill grading operations. Dust generated during construction varies substantially on a project-by-project basis, depending on the level of activity, the specific operations, and weather conditions at the time of construction.

Table J: Short-Term Regional Construction Emissions

Year	Total Regional Pollutant Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
2019	5.8	67.4	31.1	0.1	7.6	4.7
SCAQMD Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Compiled by LSA Associates, Inc. (May 2019)

CO = carbon monoxide
lbs/day = pounds per day
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
SCAQMD = South Coast Air Quality Management District
SO_X = sulfur oxides
VOC = volatile organic compounds

The construction calculations prepared for this project assumed that dust control measures (watering a minimum of twice daily) would be employed to reduce emissions of fugitive dust during site grading. Further, all construction would need to comply with SCAQMD Rule 403 regarding the emission of fugitive dust. Table J lists total construction emissions (i.e., fugitive-dust emissions and construction-equipment exhausts) that have incorporated the following Rule 403 measures that would be implemented to significantly reduce PM_{10} emissions from construction. The Rule 403 measures that were incorporated in the CalEEMod analysis are:

- Water active sites at least twice daily (locations where grading is to occur shall be thoroughly watered prior to earthmoving)
- Cover all trucks hauling dirt, sand, soil, or other loose materials, or maintain at least 2 ft (0.6 meter) of freeboard (vertical space between the top of the load and the top of the trailer) in accordance with the requirements of California Vehicle Code Section 23114.
- Reduce traffic speeds on all unpaved roads to 15 mph or less

Localized Impacts Analysis

Table K shows that the construction emission rates would not exceed the LSTs for the existing residences southeast of the project site nor the workers at the adjacent light industrial uses.

Table K: Construction Localized Impacts Analysis

Emissions Sources	NO_X	CO	PM_{10}	$PM_{2.5}$
On-Site Emissions	67	31	8	5
LST	249	8,086	152	89
Exceeds Threshold?	**No**	**No**	**No**	**No**

Source: Compiled by LSA Associates, Inc. (May 2019)
Note: Source Receptor Area – Central Orange County Coastal, 3 acres, receptors at 500 meters (1,640 feet).

CO = carbon monoxide
lbs/day = pounds per day
LST = localized significance threshold
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size

Odors from Construction Activities

Heavy-duty equipment in the project area during construction would emit odors, primarily from the equipment exhaust. However, the construction activity would cease to occur after individual construction is completed. No other sources of objectionable odors have been identified for the proposed project, and no mitigation measures are required.

Naturally Occurring Asbestos

The proposed project site is in Orange County, which is not among the counties that are found to have serpentine and ultramafic rock in their soils (California Department of Conservation n.d.). Therefore, the potential risk for naturally occurring asbestos during project construction is small and would be less than significant.

Construction Emissions Conclusions

Table J shows that daily regional construction emissions would not exceed the daily thresholds of any criteria pollutant emission thresholds established by SCAQMD. Table K shows that the on-site emissions would not exceed the LSTs for any LST pollutant. Therefore, during construction, there would be no air quality impacts.

Long-Term Regional Air Quality Impacts

Long-Term Project Operational Emissions

Long-term air pollutant emission impacts are those associated with stationary sources and mobile sources involving any project-related changes. Under existing conditions, the green waste material is chipped and ground at existing materials recovery facilities, transfer stations, and green waste/ wood waste chipping and grinding facilities in Orange County and is then brought to landfills for use as alternative daily cover (ADC) or erosion control, wherein the material is placed on top of all refuse disposed at the landfills by the end of the working day and compacted. ADC would compost and generate the same amount of air pollutants as the composting operation. Compared to existing conditions, the proposed project would result in net increases in off-road and mobile-source emissions because of the operation of composting facility.

Based on the trip generation estimates prepared for the project contained in the *Limited Scope Traffic Impact Analysis* (LSA 2019), project operations would result in 60 total trips on a peak day. All of the trips would be associated with heavy-heavy-duty trucks delivering waste to the project site and transporting finished compost materials off the project site.

The project's composting operation would require using off-road equipment, including a windrow turner, two front-end loaders, and two trucks for placing the unloaded green waste and wood waste into the windrows. Such equipment typically uses fossil-based fuels to operate. Similar to construction activities, the combustion of fossil-based fuels creates air pollutants.

Composting facilities are also sources of VOC and ammonia (NH_3). Emissions from existing conditions and proposed open windrow composting were calculated based on SCAQMD's *Guidelines for Calculating Emissions from Greenwaste Composting and Co-Composting Operations* (SCAQMD 2015d). NH_3 is not a criteria pollutant regulated by SCAQMD, so it is only listed for information purposes. Composting and ADC use of green waste would be expected to have similar emission rates, as shown in Table L.

Table L: Peak Daily Regional Operational Emissions

Source	Pollutant Emissions (lbs/day)						
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Existing Condition							
Green Waste Decomposition	2,779	0	0	0	0	0	393
Open Windrow Composting							
Mobile	0.4	13.9	2.8	<0.1	0.8	0.3	0
Off-Road	3.3	34.6	18.5	<0.1	1.2	1.1	0
Composting	2,779	0	0	0	0	0	393
Total Project Emissions	**2,828**	**48.6**	**21.2**	**0.1**	**2.1**	**1.4**	**393**
New Net Emissions	**3.6**	**48.6**	**21.2**	**0.1**	**2.1**	**1.4**	**0**
SCAQMD Thresholds	**55**	**55**	**550**	**150**	**150**	**55**	**-**
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**-**

Source: Compiled by LSA Associates, Inc. (May 2019)

CO = carbon monoxide
lbs/day = pounds per day
NO_X = nitrogen oxides
NH_3 = ammonia
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
SCAQMD = South Coast Air Quality Management District
SO_X = sulfur oxides
VOC = volatile organic compounds

As shown in Table L, the net increases in pollutant emissions of open windrow composting compared to existing conditions was calculated to determine the level of significance and impact on regional air quality as a result of the proposed project. The net increase in operational emissions of criteria pollutants would be below the SCAQMD thresholds. Potential emissions of criteria pollutants associated with long-term operation of the proposed project would be below the thresholds; therefore, the impacts are considered less than significant.

Localized Impacts Analysis

Table M shows the calculated emissions for the proposed operational activities compared with the appropriate LSTs. By design, the localized impacts analysis only includes on-site sources; however, the CalEEMod outputs do not separate on-site and off-site emissions for mobile sources. For a worst-case scenario assessment, the emissions shown in Table M include all on-site project-related stationary sources and 5 percent of the project-related new mobile sources, which is an estimate of the amount of project-related new vehicle traffic that would occur on site. A total of 5 percent is considered conservative because the average round-trip lengths assumed are 15 miles. It is unlikely that the average on-site distance driven would be even 1,000 ft, which is approximately 2 percent of the total miles traveled. Considering the total trip length included in CalEEMod, the 5 percent assumption is conservative.

Table M shows that the operational emission rates would not exceed the LSTs for either the closest residents across SR-241 from the project site or the workers at the adjacent light industrial uses. Therefore, operation of the proposed project would not result in a locally significant air quality impact.

Table M: Long-Term Operational Localized Impacts Analysis

Emissions Sources	NO_X	CO	PM_{10}	$PM_{2.5}$
On-Site Emissions	35	19	1	1
LST	278	9,272	41	25
Exceeds Threshold?	**No**	**No**	**No**	**No**

Source: Compiled by LSA Associates, Inc. (2019).
Note: On-site traffic assumed to be 5 percent of total.
CO = carbon monoxide
LST = local significance thresholds
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size

Odors from Operational Activities

SCAQMD Rule 402 regarding nuisances 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 composting operation could release localized odors; however, finished compost would be placed on top of the active compost piles to significantly reduce odors. In addition, such odors in general would be confined mainly to the project site and would readily dissipate, thus would not impact the closest residences that are located more than 3,500 ft from the composting operation site. Therefore, objectionable odors affecting a substantial number of people would not occur as a result of the project.

Long-Term Microscale (CO Hot Spot) Analysis

Vehicular trips associated with the proposed project would contribute to congestion at intersections and along roadway segments in the project vicinity. Localized air quality impacts would occur when emissions from vehicular traffic increase as a result of the proposed project. The primary mobile-source pollutant of local concern is CO, a direct function of vehicle idling time and, thus, of traffic-flow conditions. CO transport is extremely limited; under normal meteorological conditions, CO disperses rapidly with distance from the source. However, under certain extreme meteorological conditions, CO concentrations near a congested roadway or intersection may reach unhealthful levels, affecting local sensitive receptors (e.g., residents, schoolchildren, the elderly, and hospital patients). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service or with extremely high traffic volumes. In areas with high ambient background CO concentrations, modeling is recommended to determine a project's effect on local CO levels.

An assessment of project-related impacts on localized ambient air quality requires that future ambient air quality levels be projected. Existing CO concentrations in the immediate project vicinity are not available. Ambient CO levels monitored at the Mission Viejo Station, the closest station with complete monitored CO data, showed a highest recorded 1-hour concentration of 1.4 ppm (the State standard is 20 ppm) and a highest 8-hour concentration of 0.9 ppm (the State standard is 9 ppm) during the past 3 years (Table E). The highest CO concentrations would normally occur during peak traffic hours; hence, CO impacts calculated under peak traffic conditions represent a worst-case analysis.

As described in the *Limited Scope Traffic Impact Analysis* (LSA 2019), the evaluation of the study area intersection and roadway segment LOS with the addition of the proposed project traffic to the existing and short-term interim-year conditions would not create any significant adverse impacts according to the City of Irvine's performance criteria (all project traffic would travel on Irvine roads).

Therefore, the project can be implemented in an existing setting with no significant peak-hour intersection impacts. Given the extremely low level of CO concentrations in the project area, and no traffic impacts at any intersections, project-related vehicles are not expected to contribute significantly to result in the CO concentrations exceeding the State or federal CO standards. Because no CO hot spots would occur, there would be no project-related impacts on CO concentrations.

Assessment of Project-Related Health-Related Impacts

Although the project is not expected to exceed SCAQMD's numeric regional mass daily emission thresholds, this does not in itself constitute a less than significant health impact to the population adjacent to the project site and within the Basin.

SCAQMD's numeric regional thresholds are based in part on Section 180(e) of the CAA. (Please note that the numeric regional mass daily thresholds have not changed since their adoption as part of the *CEQA Air Quality Handbook* published by SCAQMD in 1993, which is more than 20 years ago.) The numeric regional mass daily thresholds are also intended to provide a means of consistency in significance determination within the environmental review process. Notwithstanding, simply exceeding the SCAQMD's numeric regional mass daily thresholds does not constitute a particular health impact to an individual nearby. The reason for this is that the mass daily thresholds are in pounds per day emitted into the air, whereas health effects are determined based on the concentration of emissions in the air at a particular location (e.g., parts per million by volume of air, or micrograms per cubic meter of air). State and federal ambient air quality standards (listed in Table A) were developed to protect the most susceptible population groups from adverse health effects and were established in terms of parts per million or micrograms per cubic meter for the applicable emissions.

For this reason, the SCAQMD developed a methodology to assist lead agencies in analyzing localized air quality impacts from a proposed project as they relate to CO, NO_X, $PM_{2.5}$, and PM_{10}. This methodology is collectively referred to as the LSTs. The LSTs differ from the numeric regional mass daily thresholds because the LSTs are based on the amount of emissions generated from a project that is not expected to cause or contribute to an exceedance of the most stringent applicable federal or State AAQS, and are based on the ambient concentrations of the pollutant and the relative distance to the nearest sensitive receptor (SCAQMD performed air dispersion modeling to determine what amount of emissions generated a particular concentration at a particular distance).

This air quality analysis evaluated the project's localized impact to air quality for emissions of CO, NO_X, $PM_{2.5}$, and PM_{10} by comparing the project's on-site emissions to SCAQMD's applicable LSTs (see pages 29 and 31). As shown in Tables K and M, the project would not result in emissions that exceed SCAQMD's LSTs. Therefore, the project would not be expected to exceed the most stringent applicable federal or State AAQS for emissions of NO_X, $PM_{2.5}$, and PM_{10}. It should be noted that the AAQS were developed to represent levels at which the most susceptible persons (children and the elderly) are protected. In other words, the AAQS are purposefully set low to protect children, elderly, and those with existing respiratory problems.

Furthermore, as described on page 16, air quality trends for emissions of NO_X, VOCs, and O_3 (which is a byproduct of NO_X and VOCs) have been trending downward within the Basin even as development has increased over the last several years. Therefore, because the project would not exceed the SCAQMD's applicable numeric thresholds, the project would not result in any Basin-wide increase in health effects.

As noted in the Brief of Amicus Curiae by SCAQMD (SCAQMD 2015c), the SCAQMD has acknowledged that for criteria pollutants it would be extremely difficult, if not impossible, to quantify health impacts for various reasons, including modeling limitations as well as where in the atmosphere air pollutants interact and form. Furthermore, as noted in the Brief of Amicus Curiae by the San Joaquin Valley Air Pollution Control District (SJVAPCD) (SJVAPCD 2015), SJVAPCD has acknowledged that currently available modeling tools are not equipped to provide a meaningful analysis of the correlation between an individual development project's air emissions and specific human health impacts.[1,2]

Additionally, the SCAQMD acknowledges that health effects quantification from O_3, as an example, is correlated with the increases in the ambient level of O_3 in the air (concentration) that an individual person breathes. The SCAQMD goes on to state that it would take a large amount of additional emissions to cause a modeled increase in ambient O_3 levels over the entire region. SCAQMD states that based on its own modeling in SCAQMD's 2012 AQMP, a reduction of 432 tons/864,000 pounds per day (lbs/day) of NO_X and a reduction of 187 tons/374,000 lbs/day of VOCs would reduce O_3 levels at the highest monitored site by only 9 parts per billion. As such, SCAQMD concludes that it is not currently possible to accurately quantify O_3-related health impacts caused by NO_X or VOC emissions from relatively small projects (defined as projects with regional scope) due to photochemistry and regional model limitations.[3]

To underscore this point, SCAQMD goes on to state that it has only been able to correlate potential health outcomes for very large emissions sources—as part of its rulemaking activity, specifically 6,620 lbs/day of NO_X and 89,180 lbs/day of VOC were expected to result in approximately 20 premature deaths per year and 89,947 school absences due to O_3.

The proposed project does not generate anywhere near 6,620 lbs/day of NO_X or 89,190 lbs/day of VOC emissions. As shown in Table I, the project would generate a maximum of 57 lbs/day of NO_X during construction (0.9 percent of 6,620 lbs/day) and as shown in Table L would generate a maximum of 49 lbs/day of NO_X during operations (0.7 percent of 6,620 lbs/day). The project would also generate a maximum of 6 lbs/day of VOC emissions during construction and 2,828 lbs/day of VOC emissions during operations (0.01 percent and 3.2 percent of 89,190 lbs/day, respectively). The net increase of VOC emissions during operations compared to existing conditions would be 4 lbs/day (less than 0.01 percent of 89,190 lbs/day).

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1 This is even true for the scope of the Friant Ranch Project. which includes the construction of approximately 2,500 single and multifamily residential units, a commercial village center, a recreation center, trails, open space, a neighborhood electric vehicle network, parks and parkways, and 250,000 square feet of commercial space on 482 acres.

2 San Joaquin Valley Unified Air Pollution Control District (SJVAPCD). 2015. Amicus Curiae Brief of SJVAPCD, page 4.

3 South Coast Air Quality Management District (SCAQMD). 2015c. Amicus Curiae Brief of SCAQMD, page 11.

Therefore, the project's emissions are not sufficiently high enough to use a regional modeling program to correlate health effects on a Basin-wide level. Further, SJVAPCD acknowledges the same: "…the Air District is simply not equipped to analyze and to what extent the criteria pollutant emissions of an individual CEQA project directly impact human health in a particular area…even for projects with relatively high levels of emissions of criteria pollutant precursor emissions."[1]

Notwithstanding, as previously noted, this air quality analysis does include a site-specific localized impact analysis that does correlate potential project health impacts on a local level to immediately adjacent land uses. The SCAQMD Brief of Amicus Curiae (2015c) and SJVAPCD Brief of Amicus Curiae (2015) are incorporated by reference into this report and into the environmental documentation for this project, including all references therein.

Unfortunately, current scientific, technological, and modeling limitations prevent the relation of expected adverse air quality impacts to likely health consequences. For this reason, this section explains in meaningful detail why it is not feasible to provide such an analysis.

Greenhouse Gas Emissions

This section evaluates potential significant impacts to GCC that could result from implementation of the proposed project. Because it is not possible to tie specific GHG emissions to actual changes in climate, this evaluation focuses on the project's emission of GHGs.

Construction and operation of the proposed project would generate GHG emissions. Overall, the following activities associated with the proposed project could directly or indirectly contribute to the generation of GHG emissions.

- **Construction Activities:** During construction, the project, would emit GHGs through the operation of construction equipment and from worker and vendor vehicles, each of which typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs (e.g., CO_2, CH_4, and N_2O). Furthermore, CH_4 is emitted during the fueling of heavy equipment.

- **Motor Vehicle Use:** Transportation associated with the proposed project would result in GHG emissions from the combustion of fossil fuels in daily truck trips transporting waste and finished compost materials.

- **Off-road Equipment Use:** The project's composting operation would require a windrow turner, two front-end loaders, and two trucks for placing the unloaded green waste and wood waste into the windrows, and such equipment typically uses fossil-based fuels to operate. Similar to construction activities, the combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O. Furthermore, CH_4 is emitted during the fueling of heavy equipment. The off-road equipment would be used during operating hours of the proposed project, which would be 7:00 a.m. to 5:00 p.m., Monday through Saturday.

- **Waste Composting:** GHG emissions due to the composting process come from transportation (waste collection and delivery of finished produce), process emissions (waste manipulation

[1] San Joaquin Valley Unified Air Pollution Control District (SJVAPCD). 2015. Amicus Curiae Brief of SJVAPCD, page 8.

during the production of compost, including water use) and fugitive emissions (CH_4 and N_2O emissions from the composting material). The transportation and process emissions were calculated in CalEEMod, while the fugitive emissions were calculated using emission factors as shown in Table N from the *Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities* that was conducted by CARB in 2017 (CARB 2017). It should be noted that even though not calculated in this report for CEQA purposes, composting provides multiple co-benefits, including reduced soil erosion and a decrease in fertilizer and herbicide use. Table N shows emission reduction factors for informational purposes. Because co-benefits would help reduce GHG emissions much more than the composting process generating GHGs, from a life-cycle view, the composting process would be beneficial.

Table N: Summary of Composting GHG Emission Factors

Emission/Reduction Type	Emission/Reduction Factor (MT CO_2e/ton of waste)
Fugitive CH_4 Emissions	0.049
Fugitive N_2O Emissions	0.021
Total Emissions	**0.070**
Decreased Soil Erosion	-0.08
Decreased Fertilizer Use	-0.15
Decreased Herbicide Use	0.0
Total Reductions	**-0.23**

Source: Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities (CARB 2017)

ARB = California Air Resources Board
CO_2e = carbon dioxide equivalent
CH_4 = methane
GHG = greenhouse gas
MT = metric tons
N_2O = nitrous oxide

Construction activities produce combustion emissions from various sources, such as grading and motor vehicles transporting the construction crew. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change. Table O lists the annual CO_2 emissions for each of the planned construction phases. Per SCAQMD guidance[1], due to the long-term nature of the GHGs in the atmosphere, instead of determining significance of construction emissions alone, the total construction emissions are amortized over 30 years (an estimate of the life of the project) and included in the operations analysis provided in Table P. Refer to the attachment of this memorandum for the detailed CalEEMod outputs.

Table O: Construction Greenhouse Gas Emissions

Year	Total Regional Pollutant Emissions (MT/yr)			
	CO_2	CH_4	N_2O	CO_2e
2019	131.2	0.03	0	132.0
Amortized over 30 years	4.4	<0.01	0	4.4

Source: Compiled by LSA Associates, Inc. (May 2019)

CH_4 = methane
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
MT/yr = metric tons per year
N_2O = nitrous oxide

1 SCAQMD GHG Meeting 14 Main Presentation, November 19, 2009. Website: http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-14/ghg-meeting-14-main-presentation.pdf.

Table P: Annual Total Greenhouse Gas Emissions

Source	GHG Emissions (MT/yr)					
	Bio- CO_2	NBio- CO_2	Total CO_2	CH_4	N_2O	CO_2e
Existing Condition						
Waste Decomposition[1]	**-**	**-**	**-**	**-**	**-**	**12,745**
Open Windrow Composting						
Mobile Sources	0	551	551	0.04	0	553
Off-road Equipment	0	849	849	0.27	0	856
Composting[1]	-	-	-	-	-	12,745
Amortized Construction	0	4	4	<0.01	0	4
Total Open Windrow Composting Emissions	**0**	**1,404**	**1,404**	**0.32**	**0**	**14,158**
New Net Emissions	**0**	**1,404**	**1,404**	**0.32**	**0**	**1,413**
					SCAQMD Tier 3 Threshold	**3,000**
					Exceeds SCAQMD Thresholds?	**No**

Source: CalEEMod Version 2016.3.2; Compiled by LSA Associates, Inc. (May 2019)

[1] There is no information available for each type of GHG emission other than CO_2e for the waste decomposition process, so only CO_2e is reported.

Bio-CO_2 = biologically generated CO_2
CH_4 = methane
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
GHG = greenhouse gas
MT/yr = metric tons per year
N_2O = nitrous oxide
NBio-CO_2 = non-biologically generated CO_2

Open windrow composting operations at the FRB Landfill generate GHG emissions from mobile sources, off-road equipment, and composting process. Mobile-source emissions of GHGs include project-generated vehicle trips associated with trucks delivering waste to the site and transporting finished composting materials off the site. Off-road equipment required for the operation of the proposed project would emit GHGs because of the combustion of fossil-based fuels. Waste composting would emit GHGs from the composting material. It is assumed that the maximum daily throughput for the composting operation would be 595 tons per day. It is also assumed that under existing conditions, 595 tons of green waste would be used as ADC and erosion control at the FRB landfill, resulting in the disposal of this material. Under existing conditions, ADC would compost and generate the same amount of GHGs as the composting operation. Using standard resource consumption rates provided in CalEEMod and the composting emission factors from Table N, Table P lists the estimated GHG emissions from the existing conditions and operation of the proposed open windrow composting. CalEEMod printouts are included in the attachment of this memorandum.

Long-term operation of the proposed project would generate GHG emissions from off-road equipment, mobile sources, and composting process as discussed above. As shown in Table P, the proposed project will result in a net new emission of 1,413 MT CO_2e per year compared to the existing conditions, which is below the SCAQMD Tier 3 threshold of 3,000 MT CO_2e per year. Therefore, the impact is less than significant, and no mitigation measures are required.

Air Quality Management Plan Consistency

A consistency determination plays an essential role in local agency project review by linking local planning and unique individual projects to the air quality plans. A consistency determination fulfills the CEQA goal of fully informing local agency decision-makers of the environmental costs of the project under consideration at a stage early enough to ensure that air quality concerns are addressed. Only new or amended General Plan elements, Specific Plans, and significantly unique projects need to undergo a consistency review due to the air quality plan strategy being based on projections from local General Plans.

The AQMP is based on regional growth projections developed by SCAG. The proposed project is a composting facility built at an active landfill and would not house more than 1,000 persons, occupy more than 40 acres of land, or encompass more than 650,000 square feet of floor area. Thus, the proposed project would not be defined as a regionally significant project under CEQA; therefore, it does not meet SCAG's Intergovernmental Review criteria.

Pursuant to the methodology provided in Chapter 12 of the 1993 SCAQMD *CEQA Air Quality Handbook*, consistency with the Basin 2016 AQMP is affirmed when a project (1) would not increase the frequency or severity of an air quality standards violation or cause a new violation and (2) is consistent with the growth assumptions in the AQMP. Consistency review is presented as follows:

1. The project would result in short-term construction and long-term operational pollutant emissions that are all less than the CEQA significance emissions thresholds established by SCAQMD, as demonstrated above; therefore, the project in would not result in an increase in the frequency or severity of an air quality standards violation or cause a new air quality standard violation.

2. The *CEQA Air Quality Handbook* indicates that consistency with AQMP growth assumptions must be analyzed for new or amended General Plan elements, Specific Plans, and significant projects. Significant projects include airports, electrical generating facilities, petroleum and gas refineries, designation of oil drilling districts, water ports, solid waste disposal sites, and offshore drilling facilities. The proposed project would divert organic waste from landfills, which would cause a net decrease of VOC emissions and a slight increase of other criteria pollutants, which is far below the AQMP growth assumptions. Furthermore, the proposed project would extend the life of existing landfills by diversion, and reduce the need to develop more landfills that may be located further from the source of solid waste generation. Therefore, the proposed project is consistent with SCAQMD AQMP growth assumptions.

Based on the consistency analysis presented above, the proposed project would be consistent with the regional AQMP.

Scoping Plan Consistency

The CARB's Scoping Plan outlines the main State strategies for meeting the emission reduction targets and to reduce GHGs that contribute to global climate change. Pursuant to AB 32, the Scoping Plan must "*identify and make recommendations on direct emission reduction measures, alternative compliance mechanisms, market-based compliance mechanisms, and potential monetary and nonmonetary incentives*" in order to achieve the 2020 goal, and achieve "*the maximum technologically feasible and cost-effective greenhouse gas emission reductions*" by 2020 and maintain and continue reductions beyond 2020.

The companion bill to SB 32, AB 197, provides additional direction to CARB on the following areas related to the adoption of strategies to reduce GHG emissions. Additional direction in AB 197 meant to provide easier public access to air emissions data that are collected by CARB was posted in December 2016.

The proposed project would not consume water or energy, and would not increase passenger vehicle use. As discussed above, composting decreases soil erosion and reduces the use of fertilizers and herbicides from a life-cycle view. Although the composting operation causes GHG emissions during the collection of the initial feedstock and delivery of the compost and as microorganisms convert the initial feedstock to compost, the co-benefit would compensate those emissions and even reduce the large amount of GHG emissions. Therefore, from a global climate change view, the proposed project is beneficial and would not conflict with applicable Statewide action measures. The proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Given this consistency, it is concluded that the proposed project's impact to the climate from GHG emissions would not be cumulatively considerable.

Energy Impact

The energy impact analysis is based on the following two energy-related CEQA environmental checklist questions.

a. *Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?*

The proposed project would be an open a windrow composting facility and would demand energy during construction and operation of the project.

Construction-Period Energy Use. The anticipated construction schedule assumes that the proposed project would be built over 2 months. The proposed project would require minor site preparation, grading, building a berm and retention basin, and installing water and electrical lines during construction.

Construction of the proposed project would require energy for the manufacture and transportation of construction materials, preparation of the site for grading activities, and utilities construction activities. Petroleum fuels (e.g., diesel and gasoline) would be the primary sources of energy for these activities. Energy usage on the project site during construction would be temporary in nature and would be relatively small in comparison to the State's available energy sources. Therefore, construction energy impacts would be less than significant, and no mitigation would be required.

Operational Energy Use. Energy use consumed by the proposed project would be associated with fuel used for on-site off-road equipment and vehicle trips associated with the project. The project would not consume any electricity or natural gas during operation.

It is estimated that the proposed project would result in 900 VMT per day or 280,800 VMT per year. The average fuel economy for heavy-heavy-duty trucks in Orange County is 6.4 miles per gallon of diesel.[1] Therefore, the proposed project would result in the consumption of 43,779 gallons of diesel per year.

In addition, the proposed project would use off-road equipment on-site, which would consume diesel. The composting operation of the proposed project would require a windrow turner, two front-end loaders, and two trucks for placing the unloaded green waste and wood waste into the windrows. The off-road equipment would be used 10 hours per day, 6 days per week. Fuel consumption of off-road equipment was calculated based on the equation:

Fuel Consumption = Horsepower * Load Factor * Specific Fuel Consumption

where the specific fuel consumption was assumed as 0.22 kilogram (7.75 ounces) per kilowatt hour for a diesel engine (Klanfar, et al 2016)[2]. Table Q shows the annual fuel consumption of each type of off-road equipment and the total annual fuel consumption.

Table Q: Fuel Consumption of Off-Road Equipment

Equipment	Quantity	Horsepower	Load Factor	Fuel Consumption (gallons/year)
Windrow Turner	1	320	0.42	27,925
Front-end Loader	2	203	0.36	30,369
Off-Highway Truck	2	402	0.38	63,480
			Total	**121,774**

Sources: CalEEMod Version 2016.3.2
Mario Klanfar, Tomislav Korman, Trpimir Kujundžić, 2016. *Fuel Consumption and Engine Load Factors of Equipment in Quarrying of Crushed Stone*. February.

In total, the delivery truck trips and off-road equipment would consume 165,553 gallons of diesel per year. In 2015, vehicles in California consumed 4.2 billion gallons of diesel.[3] Therefore, diesel demand generated by vehicle trips and off-road equipment associated with the proposed project would be a minimal fraction of diesel fuel consumption in California. Therefore, implementation of the proposed project would not result in a substantial increase in transportation-related energy uses, and would not result in the wasteful, inefficient or unnecessary consumption of fuel. Impacts would be less than significant, and no mitigation would be required.

b. *Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?*

In 2002, the Legislature passed SB 1389, which required the CEC to develop an integrated energy plan every 2 years for electricity, natural gas, and transportation fuels, for the California Energy Policy Report. The plan calls for the State to assist in the transformation of the

1 CARB EMFAC2017 Web Database. Website: https://www.arb.ca.gov/emfac/2017/ (accessed May 2019).
2 Mario Klanfar, Tomislav Korman, Trpimir Kujundžić, 2016. *Fuel Consumption and Engine Load Factors of Equipment in Quarrying of Crushed Stone*. February.
3 California Energy Commission, 2017a. California Diesel Data, Facts, and Statistics. Website: https://www.energy.ca.gov/almanac/transportation_data/diesel.html (accessed May 2019).

transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the least environmental and energy costs. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for zero-emission vehicles and their infrastructure needs, and encouragement of urban designs that reduce VMT and accommodate pedestrian and bicycle access.

The CEC recently adopted the 2017 Integrated Energy Policy Report.[1] The 2017 Integrated Energy Policy Report provides the results of the CEC's assessments of a variety of energy issues facing California. Many of these issues will require action if the State is to meet its climate, energy, air quality, and other environmental goals while maintaining energy reliability and controlling costs. The 2017 Integrated Energy Policy Report covers a broad range of topics, including implementation of SB 350, integrated resource planning, distributed energy resources, transportation electrification, solutions to increase resiliency in the electricity sector, energy efficiency, transportation electrification, barriers faced by disadvantaged communities, demand response, transmission, and landscape-scale planning, the California Energy Demand Preliminary Forecast, the preliminary transportation energy demand forecast, renewable gas (in response to SB 1383), updates on Southern California's electricity reliability, natural gas outlook, and climate adaptation and resiliency.

As indicated above, energy usage on the project site during construction would be temporary in nature. In addition, energy usage associated with operation of the proposed project would be relatively small in comparison to the State's available energy sources and energy impacts would be negligible at the regional level. Because California's energy conservation planning actions are conducted at a regional level, and because the project's total impact to regional energy supplies would be minor, the proposed project would not conflict with California's energy conservation plans as described in the CEC's 2017 Integrated Energy Policy Report. Thus, as shown above, the project would avoid or reduce the inefficient, wasteful, and unnecessary consumption of energy and not result in any irreversible or irretrievable commitments of energy. Therefore, the proposed project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency, and no mitigation measures would be necessary.

Standard Conditions

Construction

The project is required to comply with regional rules that assist in reducing short-term air pollutant emissions. SCAQMD 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 (SCAQMD 2005). 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

[1] California Energy Commission. 2017b. 2017 Integrated Energy Policy Report. California Energy Commission. Publication Number: CEC-100-2017-001-CMF.

(SCAQMD Rule 403). As shown in Table J, with implementation of Rule 403 measures, the project would result in dust emissions that are below SCAQMD thresholds.

The applicable Rule 403 measures are as follows:

- 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 twice daily (locations where grading is to occur shall be thoroughly watered prior to earthmoving).
- Cover all trucks hauling dirt, sand, soil, or other loose materials, or maintain at least 2 ft (0.6 meter) of freeboard (vertical space between the top of the load and the top of the trailer) in accordance with the requirements of California Vehicle Code Section 23114.
- Pave construction access roads at least 100 ft (30 meters) onto the site from the main road.
- Reduce traffic speeds on all unpaved roads to 15 mph or less.

Cumulative Impacts

The project would contribute criteria pollutants to the area during temporary project construction. A number of individual projects in the area may be under construction simultaneously with the proposed project. Depending on construction schedules and actual implementation of projects in the area, generation of fugitive dust and pollutant emissions during construction could result in substantial short-term increases in air pollutants. However, each project would be required to comply with SCAQMD's standard construction measures. The proposed project's short-term construction emissions would not exceed the significance thresholds. Therefore, it would not have a significant short-term cumulative impact.

Similarly, the project's long-term operational emissions would not exceed SCAQMD's criteria pollutant thresholds. The project would be required to comply with SCAQMD's operational emissions thresholds, which are designed to accomplish regional emissions goals. Therefore, the proposed project would not result in a significant cumulative impact related to long-term air quality emissions.

As climate change impacts are cumulative in nature, no typical single project can result in emissions of such a magnitude that it, in and by itself, would be significant on a project basis. The project's design would result in project consistency with the California Climate Change Scoping Plan and SCAG Regional Transportation Plan/Sustainable Communities Strategy. Therefore, the proposed project would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the GHG emissions. Given this consistency, it is concluded that the proposed project's impact to the climate from GHG emissions would not be cumulatively considerable.

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Attachment: CALEEMOD Printouts and Composting Emissions Calculation

Existing Condition/Open Windrow Composting Air Pollutants Emissions

Table 1: Uncontrolled Emission Factors

Operation	VOC (lbs/ton of throughput)	NH_3 (lbs/ton of throughput)
Greenwaste Composting	4.67	0.66
Co-Composting	1.78	2.93

Max Waste Composted per day (tons)	595
Operating days per year	306

* 6 days per week, minus 6 holidays per year

	VOC	NH3
Daily Maximum (lbs)	2,779	393
Annual Maximum (lbs)	850,267	120,166

Source: http://www.aqmd.gov/docs/default-source/planning/annual-emission-reporting/guidecalcgreenwaste.pdf?sfvrsn=6
Guidelines for Calculating Emissions from Greenwaste Composting and Co-Composting Operations, SCAQMD 2015

Existing Condition/Open Windrow Composting GHG Emissions

Table 14. Summary of compost emission reduction factor (CERF).[a]

Emissions			
Emission Type		*Emission ($MTCO_2E$/ton of feedstock)*	
Transportation emissions (Te)		0	
Process emissions (Pe)		0	
Fugitive CH4 emissions (Fe)		0.049	
Fugitive N2O emissions (Fe)		0.021	
Total Emissions		*0.070*	
Emission Reductions			
Emission reduction type	*Emission reduction ($MTCO_2E$/ton of compost)*	*Conversion factor*	*Final Emission reduction ($MTCO_2E$/ton of feedstock)*
Decreased Soil Erosion (E_b)	0.14	0.58	0.08
Decreased Fertilizer Use (F_b)	0.26	0.58	0.15
Decreased Herbicide Use (H_b)	0.0	0.58	0.0
Emission Reductions without ALF_b			*0.23*
Avoided Landfill Methane (ALF_b)	*Food Waste*	*Yard Trimmings*	*Mixed Organics*
	0.39	0.21	0.33
CERF	**0.62**	**0.44**	**0.56**

[a] The CERF was determined by subtracting the emissions from the emission reductions.

	Composting Process
Max Waste Composted per day (tons)	595
Operating days per year	306

* 6 days per week, minus 6 holidays per year

Annual Composted (tons)	182,070
Emssion Factor (MTCO2e/ton)	0.070
Annual Emission (MTCO2e)	12,745

Source: https://www.arb.ca.gov/cc/waste/cerffinal.pdf
Method for Estimating Greenhouse Gas Emission Reductions from Diversion of Organic Waste from Landfills to Compost Facilities

FRB Composting

South Coast Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	25.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	8			**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

Project Characteristics -

Land Use - total lot 25 acres

Construction Phase - construction info provided by developer

Off-road Equipment - construction info provided by developer

Off-road Equipment - construction info provided by developer

Off-road Equipment - construction info provided by developer

Off-road Equipment - construction info provided by developer

Off-road Equipment - construction info provided by developer

Vehicle Trips - 60 truck trips/day, 15 miles/trip

Area Coating -

Landscape Equipment - no landscape equipment

Construction Off-road Equipment Mitigation -

Operational Off-Road Equipment - 10 hours/day, Monday-Saturday. Other Construction Equipment = Windrow Turner

Fleet Mix - assume 90% trucks HHD

Trips and VMT - asphalt delivery

Table Name	Column Name	Default Value	New Value
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	35.00	10.00
tblConstructionPhase	NumDays	20.00	30.00
tblFleetMix	HHD	0.03	1.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.8710e-003	0.00
tblFleetMix	MCY	4.7260e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	9.5500e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.0270e-003	0.00
tblFleetMix	SBUS	7.0400e-004	0.00
tblFleetMix	UBUS	1.9320e-003	0.00
tblLandUse	LotAcreage	0.00	25.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	4.00

tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	306.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	306.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	306.00
tblOperationalOffRoadEquipment	OperHorsePower	172.00	320.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	10.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	10.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	10.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblTripsAndVMT	HaulingTripLength	20.00	18.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,100.00
tblTripsAndVMT	WorkerTripNumber	20.00	15.00
tblTripsAndVMT	WorkerTripNumber	8.00	18.00
tblTripsAndVMT	WorkerTripNumber	10.00	15.00
tblVehicleTrips	CC_TL	8.40	15.00
tblVehicleTrips	CC_TTP	0.00	100.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	ST_TR	0.00	60.00
tblVehicleTrips	WD_TR	0.00	60.00

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	0.0743	0.8621	0.4202	1.4200e-003	0.0609	0.0304	0.0913	0.0287	0.0280	0.0566	0.0000	131.1793	131.1793	0.0310	0.0000	131.9547
Maximum	**0.0743**	**0.8621**	**0.4202**	**1.4200e-003**	**0.0609**	**0.0304**	**0.0913**	**0.0287**	**0.0280**	**0.0566**	**0.0000**	**131.1793**	**131.1793**	**0.0310**	**0.0000**	**131.9547**

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	0.0743	0.8621	0.4202	1.4200e-003	0.0346	0.0304	0.0650	0.0149	0.0280	0.0428	0.0000	131.1792	131.1792	0.0310	0.0000	131.9546
Maximum	**0.0743**	**0.8621**	**0.4202**	**1.4200e-003**	**0.0346**	**0.0304**	**0.0650**	**0.0149**	**0.0280**	**0.0428**	**0.0000**	**131.1792**	**131.1792**	**0.0310**	**0.0000**	**131.9546**

	ROG	**NOx**	**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**	**43.20**	**0.00**	**28.81**	**48.19**	**0.00**	**24.38**	**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)**
2	**8-3-2019**	**9-30-2019**	0.8467	0.8467
		Highest	0.8467	0.8467

2.2 Overall Operational

Unmitigated Operational

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0601	2.2273	0.4471	5.6000e-003	0.1205	6.4300e-003	0.1269	0.0331	6.1500e-003	0.0392	0.0000	551.4867	551.4867	0.0423	0.0000	552.5450
Offroad	0.4984	5.3004	2.8236	9.6700e-003		0.1876	0.1876		0.1726	0.1726	0.0000	849.1149	849.1149	0.2746	0.0000	855.9805
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.5585**	**7.5277**	**3.2707**	**0.0153**	**0.1205**	**0.1940**	**0.3145**	**0.0331**	**0.1788**	**0.2118**	**0.0000**	**1,400.6016**	**1,400.6016**	**0.3170**	**0.0000**	**1,408.5254**

Mitigated Operational

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0601	2.2273	0.4471	5.6000e-003	0.1205	6.4300e-003	0.1269	0.0331	6.1500e-003	0.0392	0.0000	551.4867	551.4867	0.0423	0.0000	552.5450
Offroad	0.4984	5.3004	2.8236	9.6700e-003		0.1876	0.1876		0.1726	0.1726	0.0000	849.1149	849.1149	0.2746	0.0000	855.9805

Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.5585**	**7.5277**	**3.2707**	**0.0153**	**0.1205**	**0.1940**	**0.3145**	**0.0331**	**0.1788**	**0.2118**	**0.0000**	**1,400.6016**	**1,400.6016**	**0.3170**	**0.0000**	**1,408.5254**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Fine Grade Pad	Grading	8/5/2019	8/16/2019	5	10	
2	Miscellaneous	Paving	8/5/2019	9/13/2019	5	30	
3	Berm and Retention Basin	Trenching	8/19/2019	8/30/2019	5	10	
4	Water Line	Trenching	9/2/2019	9/27/2019	5	20	
5	Electrical Line	Trenching	9/16/2019	9/27/2019	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Fine Grade Pad	Excavators	1	4.00	158	0.38
Fine Grade Pad	Off-Highway Trucks	3	4.00	402	0.38
Fine Grade Pad	Rubber Tired Dozers	1	8.00	247	0.40

Fine Grade Pad	Rubber Tired Dozers	1	4.00	247	0.40
Fine Grade Pad	Rubber Tired Dozers	1	4.00	247	0.40
Fine Grade Pad	Scrapers	1	4.00	367	0.48
Miscellaneous	Off-Highway Trucks	2	8.00	402	0.38
Berm and Retention Basin	Forklifts	1	8.00	89	0.20
Berm and Retention Basin	Rubber Tired Dozers	1	8.00	247	0.40
Berm and Retention Basin	Rubber Tired Dozers	1	4.00	247	0.40
Water Line	Excavators	1	6.00	158	0.38
Water Line	Forklifts	1	8.00	89	0.20
Water Line	Off-Highway Trucks	1	8.00	402	0.38
Water Line	Rubber Tired Dozers	1	2.00	247	0.40
Electrical Line	Aerial Lifts	1	8.00	63	0.31
Electrical Line	Off-Highway Trucks	1	8.00	402	0.38

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
Fine Grade Pad	8	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Miscellaneous	2	5.00	0.00	1,100.00	14.70	6.90	18.00	LD_Mix	HDT_Mix	HHDT
Berm and Retention Basin	3	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Water Line	4	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Electrical Line	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Fine Grade Pad - 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					0.0478	0.0000	0.0478	0.0251	0.0000	0.0251	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0200	0.2137	0.1011	2.4000e-004		9.4400e-003	9.4400e-003		8.6800e-003	8.6800e-003	0.0000	21.1280	21.1280	6.6800e-003	0.0000	21.2951
Total	**0.0200**	**0.2137**	**0.1011**	**2.4000e-004**	**0.0478**	**9.4400e-003**	**0.0573**	**0.0251**	**8.6800e-003**	**0.0338**	**0.0000**	**21.1280**	**21.1280**	**6.6800e-003**	**0.0000**	**21.2951**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.9000e-004	3.1300e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7652	0.7652	2.0000e-005	0.0000	0.7658
Total	**3.6000e-004**	**2.9000e-004**	**3.1300e-003**	**1.0000e-005**	**8.2000e-004**	**1.0000e-005**	**8.3000e-004**	**2.2000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.7652**	**0.7652**	**2.0000e-005**	**0.0000**	**0.7658**

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					0.0215	0.0000	0.0215	0.0113	0.0000	0.0113	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0200	0.2137	0.1011	2.4000e-004		9.4400e-003	9.4400e-003		8.6800e-003	8.6800e-003	0.0000	21.1280	21.1280	6.6800e-003	0.0000	21.2951
Total	**0.0200**	**0.2137**	**0.1011**	**2.4000e-004**	**0.0215**	**9.4400e-003**	**0.0310**	**0.0113**	**8.6800e-003**	**0.0200**	**0.0000**	**21.1280**	**21.1280**	**6.6800e-003**	**0.0000**	**21.2951**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.9000e-004	3.1300e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7652	0.7652	2.0000e-005	0.0000	0.7658
Total	**3.6000e-004**	**2.9000e-004**	**3.1300e-003**	**1.0000e-005**	**8.2000e-004**	**1.0000e-005**	**8.3000e-004**	**2.2000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.7652**	**0.7652**	**2.0000e-005**	**0.0000**	**0.7658**

3.3 Miscellaneous - 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	0.0213	0.2157	0.1199	4.0000e-004		7.8400e-003	7.8400e-003		7.2200e-003	7.2200e-003	0.0000	35.5906	35.5906	0.0113	0.0000	35.8721
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Total	**0.0213**	**0.2157**	**0.1199**	**4.0000e-004**		**7.8400e-003**	**7.8400e-003**		**7.2200e-003**	**7.2200e-003**	**0.0000**	**35.5906**	**35.5906**	**0.0113**	**0.0000**	**35.8721**

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	4.4200e-003	0.1576	0.0312	3.9000e-004	8.5100e-003	5.6000e-004	9.0700e-003	2.3400e-003	5.3000e-004	2.8700e-003	0.0000	38.4710	38.4710	2.8900e-003	0.0000	38.5432
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.9000e-004	3.1300e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7652	0.7652	2.0000e-005	0.0000	0.7658
Total	**4.7800e-003**	**0.1579**	**0.0344**	**4.0000e-004**	**9.3300e-003**	**5.7000e-004**	**9.9000e-003**	**2.5600e-003**	**5.4000e-004**	**3.0900e-003**	**0.0000**	**39.2361**	**39.2361**	**2.9100e-003**	**0.0000**	**39.3090**

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	0.0213	0.2157	0.1199	4.0000e-004		7.8400e-003	7.8400e-003		7.2200e-003	7.2200e-003	0.0000	35.5906	35.5906	0.0113	0.0000	35.8721
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0213**	**0.2157**	**0.1199**	**4.0000e-004**		**7.8400e-003**	**7.8400e-003**		**7.2200e-003**	**7.2200e-003**	**0.0000**	**35.5906**	**35.5906**	**0.0113**	**0.0000**	**35.8721**

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	4.4200e-003	0.1576	0.0312	3.9000e-004	8.5100e-003	5.6000e-004	9.0700e-003	2.3400e-003	5.3000e-004	2.8700e-003	0.0000	38.4710	38.4710	2.8900e-003	0.0000	38.5432
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	2.9000e-004	3.1300e-003	1.0000e-005	8.2000e-004	1.0000e-005	8.3000e-004	2.2000e-004	1.0000e-005	2.2000e-004	0.0000	0.7652	0.7652	2.0000e-005	0.0000	0.7658
Total	**4.7800e-003**	**0.1579**	**0.0344**	**4.0000e-004**	**9.3300e-003**	**5.7000e-004**	**9.9000e-003**	**2.5600e-003**	**5.4000e-004**	**3.0900e-003**	**0.0000**	**39.2361**	**39.2361**	**2.9100e-003**	**0.0000**	**39.3090**

3.4 Berm and Retention Basin - 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	9.3100e-003	0.0977	0.0381	7.0000e-005		4.9700e-003	4.9700e-003		4.5700e-003	4.5700e-003	0.0000	6.4386	6.4386	2.0400e-003	0.0000	6.4895
Total	**9.3100e-003**	**0.0977**	**0.0381**	**7.0000e-005**		**4.9700e-003**	**4.9700e-003**		**4.5700e-003**	**4.5700e-003**	**0.0000**	**6.4386**	**6.4386**	**2.0400e-003**	**0.0000**	**6.4895**

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	4.3000e-004	3.5000e-004	3.7600e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9182	0.9182	3.0000e-005	0.0000	0.9189
Total	**4.3000e-004**	**3.5000e-004**	**3.7600e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9182**	**0.9182**	**3.0000e-005**	**0.0000**	**0.9189**

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	9.3100e-003	0.0977	0.0381	7.0000e-005		4.9700e-003	4.9700e-003		4.5700e-003	4.5700e-003	0.0000	6.4386	6.4386	2.0400e-003	0.0000	6.4895
Total	**9.3100e-003**	**0.0977**	**0.0381**	**7.0000e-005**		**4.9700e-003**	**4.9700e-003**		**4.5700e-003**	**4.5700e-003**	**0.0000**	**6.4386**	**6.4386**	**2.0400e-003**	**0.0000**	**6.4895**

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	4.3000e-004	3.5000e-004	3.7600e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9182	0.9182	3.0000e-005	0.0000	0.9189
Total	**4.3000e-004**	**3.5000e-004**	**3.7600e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9182**	**0.9182**	**3.0000e-005**	**0.0000**	**0.9189**

3.5 Water Line - 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	0.0135	0.1365	0.0871	2.1000e-004		6.1600e-003	6.1600e-003		5.6700e-003	5.6700e-003	0.0000	18.6313	18.6313	5.8900e-003	0.0000	18.7787
Total	**0.0135**	**0.1365**	**0.0871**	**2.1000e-004**		**6.1600e-003**	**6.1600e-003**		**5.6700e-003**	**5.6700e-003**	**0.0000**	**18.6313**	**18.6313**	**5.8900e-003**	**0.0000**	**18.7787**

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	7.2000e-004	5.8000e-004	6.2600e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5304	1.5304	5.0000e-005	0.0000	1.5316
Total	**7.2000e-004**	**5.8000e-004**	**6.2600e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5304**	**1.5304**	**5.0000e-005**	**0.0000**	**1.5316**

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	0.0135	0.1365	0.0871	2.1000e-004		6.1600e-003	6.1600e-003		5.6700e-003	5.6700e-003	0.0000	18.6313	18.6313	5.8900e-003	0.0000	18.7787
Total	**0.0135**	**0.1365**	**0.0871**	**2.1000e-004**		**6.1600e-003**	**6.1600e-003**		**5.6700e-003**	**5.6700e-003**	**0.0000**	**18.6313**	**18.6313**	**5.8900e-003**	**0.0000**	**18.7787**

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	7.2000e-004	5.8000e-004	6.2600e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5304	1.5304	5.0000e-005	0.0000	1.5316
Total	**7.2000e-004**	**5.8000e-004**	**6.2600e-003**	**2.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5304**	**1.5304**	**5.0000e-005**	**0.0000**	**1.5316**

3.6 Electrical Line - 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	3.7500e-003	0.0394	0.0255	7.0000e-005		1.3900e-003	1.3900e-003		1.2800e-003	1.2800e-003	0.0000	6.6858	6.6858	2.1200e-003	0.0000	6.7387
Total	**3.7500e-003**	**0.0394**	**0.0255**	**7.0000e-005**		**1.3900e-003**	**1.3900e-003**		**1.2800e-003**	**1.2800e-003**	**0.0000**	**6.6858**	**6.6858**	**2.1200e-003**	**0.0000**	**6.7387**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2000e-004	1.0000e-004	1.0400e-003	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2551	0.2551	1.0000e-005	0.0000	0.2553
Total	**1.2000e-004**	**1.0000e-004**	**1.0400e-003**	**0.0000**	**2.7000e-004**	**0.0000**	**2.8000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2551**	**0.2551**	**1.0000e-005**	**0.0000**	**0.2553**

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	3.7500e-003	0.0394	0.0255	7.0000e-005		1.3900e-003	1.3900e-003		1.2800e-003	1.2800e-003	0.0000	6.6858	6.6858	2.1200e-003	0.0000	6.7387
Total	**3.7500e-003**	**0.0394**	**0.0255**	**7.0000e-005**		**1.3900e-003**	**1.3900e-003**		**1.2800e-003**	**1.2800e-003**	**0.0000**	**6.6858**	**6.6858**	**2.1200e-003**	**0.0000**	**6.7387**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2000e-004	1.0000e-004	1.0400e-003	0.0000	2.7000e-004	0.0000	2.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2551	0.2551	1.0000e-005	0.0000	0.2553
Total	**1.2000e-004**	**1.0000e-004**	**1.0400e-003**	**0.0000**	**2.7000e-004**	**0.0000**	**2.8000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2551**	**0.2551**	**1.0000e-005**	**0.0000**	**0.2553**

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	0.0601	2.2273	0.4471	5.6000e-003	0.1205	6.4300e-003	0.1269	0.0331	6.1500e-003	0.0392	0.0000	551.4867	551.4867	0.0423	0.0000	552.5450
Unmitigated	0.0601	2.2273	0.4471	5.6000e-003	0.1205	6.4300e-003	0.1269	0.0331	6.1500e-003	0.0392	0.0000	551.4867	551.4867	0.0423	0.0000	552.5450

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	60.00	60.00	0.00	280,800	280,800
Total	60.00	60.00	0.00	280,800	280,800

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
User Defined Industrial	0.00	15.00	0.00	0.00	100.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000

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	0.0000	0.0000	0.0000	0.0000	0.0000

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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					
User Defined Industrial	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		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	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					
User Defined Industrial	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		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	3.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e

Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			

Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Off-Highway Trucks	2	10.00	306	402	0.38	Diesel
Other Construction Equipment	1	10.00	306	320	0.42	Diesel
Rubber Tired Loaders	2	10.00	306	203	0.36	Diesel

UnMitigated/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
Equipment Type	tons/yr										MT/yr					
Off-Highway Trucks	0.2536	2.4185	1.4574	5.0500e-003		0.0881	0.0881		0.0811	0.0811	0.0000	443.6795	443.6795	0.1435	0.0000	447.2669
Other Construction Equipment	0.1016	1.1953	0.7407	2.2300e-003		0.0435	0.0435		0.0400	0.0400	0.0000	195.4461	195.4461	0.0632	0.0000	197.0264
Rubber Tired Loaders	0.1431	1.6867	0.6256	2.3900e-003		0.0560	0.0560		0.0515	0.0515	0.0000	209.9894	209.9894	0.0679	0.0000	211.6873
Total	**0.4984**	**5.3004**	**2.8236**	**9.6700e-003**		**0.1876**	**0.1876**		**0.1726**	**0.1726**	**0.0000**	**849.1149**	**849.1149**	**0.2746**	**0.0000**	**855.9805**

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

FRB Composting

South Coast Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	25.00	0.00	0

1.2 Other Project Characteristics

Urbanization Urban

Wind Speed (m/s) 2.2

Precipitation Freq (Days) 31

Climate Zone 8

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

Project Characteristics -

Land Use - total lot 25 acres

Construction Phase - construction info provided by developer

Off-road Equipment - construction info provided by developer

Off-road Equipment - construction info provided by developer

Off-road Equipment - construction info provided by developer

Off-road Equipment - construction info provided by developer

Off-road Equipment - construction info provided by developer

Vehicle Trips - 60 truck trips/day, 15 miles/trip

Area Coating -

Landscape Equipment - no landscape equipment

Construction Off-road Equipment Mitigation -

Operational Off-Road Equipment - 10 hours/day, Monday-Saturday. Other Construction Equipment = Windrow Turner

Fleet Mix - assume 90% trucks HHD

Trips and VMT - asphalt delivery

Table Name	Column Name	Default Value	New Value
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	35.00	10.00
tblConstructionPhase	NumDays	20.00	30.00
tblFleetMix	HHD	0.03	1.00
tblFleetMix	LDA	0.55	0.00
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.20	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.8710e-003	0.00
tblFleetMix	MCY	4.7260e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	9.5500e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	2.0270e-003	0.00
tblFleetMix	SBUS	7.0400e-004	0.00
tblFleetMix	UBUS	1.9320e-003	0.00
tblLandUse	LotAcreage	0.00	25.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	4.00

tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	306.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	306.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	306.00
tblOperationalOffRoadEquipment	OperHorsePower	172.00	320.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	10.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	10.00
tblOperationalOffRoadEquipment	OperHoursPerDay	8.00	10.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblTripsAndVMT	HaulingTripLength	20.00	18.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,100.00
tblTripsAndVMT	WorkerTripNumber	20.00	15.00
tblTripsAndVMT	WorkerTripNumber	8.00	18.00
tblTripsAndVMT	WorkerTripNumber	10.00	15.00
tblVehicleTrips	CC_TL	8.40	15.00
tblVehicleTrips	CC_TTP	0.00	100.00
tblVehicleTrips	CNW_TL	6.90	0.00
tblVehicleTrips	CW_TL	16.60	0.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	ST_TR	0.00	60.00
tblVehicleTrips	WD_TR	0.00	60.00

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	5.8048	67.3663	31.1252	0.1021	10.3634	2.4489	12.8123	5.2399	2.2544	7.4942	0.0000	10,358.6223	10,358.6223	2.5170	0.0000	10,421.5484
Maximum	**5.8048**	**67.3663**	**31.1252**	**0.1021**	**10.3634**	**2.4489**	**12.8123**	**5.2399**	**2.2544**	**7.4942**	**0.0000**	**10,358.6223**	**10,358.6223**	**2.5170**	**0.0000**	**10,421.5484**

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	5.8048	67.3663	31.1252	0.1021	5.1035	2.4489	7.5525	2.4774	2.2544	4.7318	0.0000	10,358.6223	10,358.6223	2.5170	0.0000	10,421.5484
Maximum	**5.8048**	**67.3663**	**31.1252**	**0.1021**	**5.1035**	**2.4489**	**7.5525**	**2.4774**	**2.2544**	**4.7318**	**0.0000**	**10,358.6223**	**10,358.6223**	**2.5170**	**0.0000**	**10,421.5484**

	ROG	**NOx**	**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**	**50.75**	**0.00**	**41.05**	**52.72**	**0.00**	**36.86**	**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	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.3797	13.9142	2.7622	0.0363	0.7850	0.0409	0.8260	0.2150	0.0392	0.2542		3,937.7561	3,937.7561	0.2934		3,945.0918
Offroad	3.2572	34.6434	18.4548	0.0632		1.2262	1.2262		1.1281	1.1281		6,117.5751	6,117.5751	1.9786		6,167.0388
Total	**3.6369**	**48.5576**	**21.2170**	**0.0995**	**0.7850**	**1.2671**	**2.0522**	**0.2150**	**1.1673**	**1.3823**		**10,055.3314**	**10,055.3314**	**2.2720**	**0.0000**	**10,112.1308**

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	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.3797	13.9142	2.7622	0.0363	0.7850	0.0409	0.8260	0.2150	0.0392	0.2542		3,937.7561	3,937.7561	0.2934		3,945.0918
Offroad	3.2572	34.6434	18.4548	0.0632		1.2262	1.2262		1.1281	1.1281		6,117.5751	6,117.5751	1.9786		6,167.0388
Total	**3.6369**	**48.5576**	**21.2170**	**0.0995**	**0.7850**	**1.2671**	**2.0522**	**0.2150**	**1.1673**	**1.3823**		**10,055.3314**	**10,055.3314**	**2.2720**	**0.0000**	**10,112.1308**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Fine Grade Pad	Grading	8/5/2019	8/16/2019	5	10	
2	Miscellaneous	Paving	8/5/2019	9/13/2019	5	30	
3	Berm and Retention Basin	Trenching	8/19/2019	8/30/2019	5	10	
4	Water Line	Trenching	9/2/2019	9/27/2019	5	20	
5	Electrical Line	Trenching	9/16/2019	9/27/2019	5	10	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Fine Grade Pad	Excavators	1	4.00	158	0.38
Fine Grade Pad	Off-Highway Trucks	3	4.00	402	0.38
Fine Grade Pad	Rubber Tired Dozers	1	8.00	247	0.40
Fine Grade Pad	Rubber Tired Dozers	1	4.00	247	0.40
Fine Grade Pad	Rubber Tired Dozers	1	4.00	247	0.40
Fine Grade Pad	Scrapers	1	4.00	367	0.48
Miscellaneous	Off-Highway Trucks	2	8.00	402	0.38
Berm and Retention Basin	Forklifts	1	8.00	89	0.20
Berm and Retention Basin	Rubber Tired Dozers	1	8.00	247	0.40
Berm and Retention Basin	Rubber Tired Dozers	1	4.00	247	0.40
Water Line	Excavators	1	6.00	158	0.38

Water Line	Forklifts	1	8.00	89	0.20
Water Line	Off-Highway Trucks	1	8.00	402	0.38
Water Line	Rubber Tired Dozers	1	2.00	247	0.40
Electrical Line	Aerial Lifts	1	8.00	63	0.31
Electrical Line	Off-Highway Trucks	1	8.00	402	0.38

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
Fine Grade Pad	8	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Miscellaneous	2	5.00	0.00	1,100.00	14.70	6.90	18.00	LD_Mix	HDT_Mix	HHDT
Berm and Retention Basin	3	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Water Line	4	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Electrical Line	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Fine Grade Pad - 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					9.5634	0.0000	9.5634	5.0226	0.0000	5.0226			0.0000			0.0000
Off-Road	3.9970	42.7311	20.2257	0.0470		1.8873	1.8873		1.7363	1.7363		4,657.9243	4,657.9243	1.4737		4,694.7672

Total	**3.9970**	**42.7311**	**20.2257**	**0.0470**	**9.5634**	**1.8873**	**11.4507**	**5.0226**	**1.7363**	**6.7589**		**4,657.9243**	**4,657.9243**	**1.4737**		**4,694.7672**

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	0.0728	0.0510	0.6719	1.7800e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		177.0542	177.0542	5.5500e-003		177.1930
Total	**0.0728**	**0.0510**	**0.6719**	**1.7800e-003**	**0.1677**	**1.3100e-003**	**0.1690**	**0.0445**	**1.2100e-003**	**0.0457**		**177.0542**	**177.0542**	**5.5500e-003**		**177.1930**

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					4.3035	0.0000	4.3035	2.2602	0.0000	2.2602			0.0000			0.0000
Off-Road	3.9970	42.7311	20.2257	0.0470		1.8873	1.8873		1.7363	1.7363	0.0000	4,657.9243	4,657.9243	1.4737		4,694.7672
Total	**3.9970**	**42.7311**	**20.2257**	**0.0470**	**4.3035**	**1.8873**	**6.1908**	**2.2602**	**1.7363**	**3.9965**	**0.0000**	**4,657.9243**	**4,657.9243**	**1.4737**		**4,694.7672**

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	0.0728	0.0510	0.6719	1.7800e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		177.0542	177.0542	5.5500e-003		177.1930
Total	**0.0728**	**0.0510**	**0.6719**	**1.7800e-003**	**0.1677**	**1.3100e-003**	**0.1690**	**0.0445**	**1.2100e-003**	**0.0457**		**177.0542**	**177.0542**	**5.5500e-003**		**177.1930**

3.3 Miscellaneous - 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	1.4198	14.3792	7.9936	0.0264		0.5229	0.5229		0.4811	0.4811		2,615.4631	2,615.4631	0.8275		2,636.1507
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4198**	**14.3792**	**7.9936**	**0.0264**		**0.5229**	**0.5229**		**0.4811**	**0.4811**		**2,615.4631**	**2,615.4631**	**0.8275**		**2,636.1507**

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	0.2909	10.1881	2.0101	0.0263	0.5765	0.0370	0.6134	0.1580	0.0354	0.1933		2,849.1627	2,849.1627	0.2084		2,854.3732
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	0.0243	0.0170	0.2240	5.9000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152		59.0181	59.0181	1.8500e-003		59.0643
Total	**0.3152**	**10.2051**	**2.2341**	**0.0269**	**0.6324**	**0.0374**	**0.6698**	**0.1728**	**0.0358**	**0.2085**		**2,908.1807**	**2,908.1807**	**0.2103**		**2,913.4376**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4198	14.3792	7.9936	0.0264		0.5229	0.5229		0.4811	0.4811	0.0000	2,615.4631	2,615.4631	0.8275		2,636.1507
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4198**	**14.3792**	**7.9936**	**0.0264**		**0.5229**	**0.5229**		**0.4811**	**0.4811**	**0.0000**	**2,615.4631**	**2,615.4631**	**0.8275**		**2,636.1507**

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	0.2909	10.1881	2.0101	0.0263	0.5765	0.0370	0.6134	0.1580	0.0354	0.1933		2,849.1627	2,849.1627	0.2084		2,854.3732
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	0.0243	0.0170	0.2240	5.9000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152		59.0181	59.0181	1.8500e-003		59.0643
Total	**0.3152**	**10.2051**	**2.2341**	**0.0269**	**0.6324**	**0.0374**	**0.6698**	**0.1728**	**0.0358**	**0.2085**		**2,908.1807**	**2,908.1807**	**0.2103**		**2,913.4376**

3.4 Berm and Retention Basin - 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	1.8618	19.5399	7.6203	0.0143		0.9938	0.9938		0.9143	0.9143		1,419.4631	1,419.4631	0.4491		1,430.6907
Total	**1.8618**	**19.5399**	**7.6203**	**0.0143**		**0.9938**	**0.9938**		**0.9143**	**0.9143**		**1,419.4631**	**1,419.4631**	**0.4491**		**1,430.6907**

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	0.0874	0.0612	0.8063	2.1300e-003	0.2012	1.5700e-003	0.2028	0.0534	1.4500e-003	0.0548		212.4651	212.4651	6.6600e-003		212.6315
Total	**0.0874**	**0.0612**	**0.8063**	**2.1300e-003**	**0.2012**	**1.5700e-003**	**0.2028**	**0.0534**	**1.4500e-003**	**0.0548**		**212.4651**	**212.4651**	**6.6600e-003**		**212.6315**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8618	19.5399	7.6203	0.0143		0.9938	0.9938		0.9143	0.9143	0.0000	1,419.4631	1,419.4631	0.4491		1,430.6907
Total	**1.8618**	**19.5399**	**7.6203**	**0.0143**		**0.9938**	**0.9938**		**0.9143**	**0.9143**	**0.0000**	**1,419.4631**	**1,419.4631**	**0.4491**		**1,430.6907**

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	0.0874	0.0612	0.8063	2.1300e-003	0.2012	1.5700e-003	0.2028	0.0534	1.4500e-003	0.0548		212.4651	212.4651	6.6600e-003		212.6315
Total	**0.0874**	**0.0612**	**0.8063**	**2.1300e-003**	**0.2012**	**1.5700e-003**	**0.2028**	**0.0534**	**1.4500e-003**	**0.0548**		**212.4651**	**212.4651**	**6.6600e-003**		**212.6315**

3.5 Water Line - 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	1.3490	13.6479	8.7094	0.0207		0.6163	0.6163		0.5670	0.5670		2,053.7532	2,053.7532	0.6498		2,069.9979
Total	**1.3490**	**13.6479**	**8.7094**	**0.0207**		**0.6163**	**0.6163**		**0.5670**	**0.5670**		**2,053.7532**	**2,053.7532**	**0.6498**		**2,069.9979**

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	0.0728	0.0510	0.6719	1.7800e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		177.0542	177.0542	5.5500e-003		177.1930
Total	**0.0728**	**0.0510**	**0.6719**	**1.7800e-003**	**0.1677**	**1.3100e-003**	**0.1690**	**0.0445**	**1.2100e-003**	**0.0457**		**177.0542**	**177.0542**	**5.5500e-003**		**177.1930**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3490	13.6479	8.7094	0.0207		0.6163	0.6163		0.5670	0.5670	0.0000	2,053.7532	2,053.7532	0.6498		2,069.9979
Total	**1.3490**	**13.6479**	**8.7094**	**0.0207**		**0.6163**	**0.6163**		**0.5670**	**0.5670**	**0.0000**	**2,053.7532**	**2,053.7532**	**0.6498**		**2,069.9979**

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	0.0728	0.0510	0.6719	1.7800e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		177.0542	177.0542	5.5500e-003		177.1930
Total	**0.0728**	**0.0510**	**0.6719**	**1.7800e-003**	**0.1677**	**1.3100e-003**	**0.1690**	**0.0445**	**1.2100e-003**	**0.0457**		**177.0542**	**177.0542**	**5.5500e-003**		**177.1930**

3.6 Electrical Line - 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	0.7506	7.8704	5.0896	0.0149		0.2782	0.2782		0.2559	0.2559		1,473.9652	1,473.9652	0.4664		1,485.6238
Total	**0.7506**	**7.8704**	**5.0896**	**0.0149**		**0.2782**	**0.2782**		**0.2559**	**0.2559**		**1,473.9652**	**1,473.9652**	**0.4664**		**1,485.6238**

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	0.0243	0.0170	0.2240	5.9000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152		59.0181	59.0181	1.8500e-003		59.0643
Total	**0.0243**	**0.0170**	**0.2240**	**5.9000e-004**	**0.0559**	**4.4000e-004**	**0.0563**	**0.0148**	**4.0000e-004**	**0.0152**		**59.0181**	**59.0181**	**1.8500e-003**		**59.0643**

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	0.7506	7.8704	5.0896	0.0149		0.2782	0.2782		0.2559	0.2559	0.0000	1,473.9652	1,473.9652	0.4664		1,485.6238
Total	**0.7506**	**7.8704**	**5.0896**	**0.0149**		**0.2782**	**0.2782**		**0.2559**	**0.2559**	**0.0000**	**1,473.9652**	**1,473.9652**	**0.4664**		**1,485.6238**

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	0.0243	0.0170	0.2240	5.9000e-004	0.0559	4.4000e-004	0.0563	0.0148	4.0000e-004	0.0152		59.0181	59.0181	1.8500e-003		59.0643
Total	**0.0243**	**0.0170**	**0.2240**	**5.9000e-004**	**0.0559**	**4.4000e-004**	**0.0563**	**0.0148**	**4.0000e-004**	**0.0152**		**59.0181**	**59.0181**	**1.8500e-003**		**59.0643**

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	0.3797	13.9142	2.7622	0.0363	0.7850	0.0409	0.8260	0.2150	0.0392	0.2542		3,937.7561	3,937.7561	0.2934		3,945.0918
Unmitigated	0.3797	13.9142	2.7622	0.0363	0.7850	0.0409	0.8260	0.2150	0.0392	0.2542		3,937.7561	3,937.7561	0.2934		3,945.0918

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	60.00	60.00	0.00	280,800	280,800
Total	60.00	60.00	0.00	280,800	280,800

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
User Defined Industrial	0.00	15.00	0.00	0.00	100.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

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					
User Defined Industrial	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		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	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					
User Defined Industrial	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		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

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

Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

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
Off-Highway Trucks	2	10.00	306	402	0.38	Diesel
Other Construction Equipment	1	10.00	306	320	0.42	Diesel
Rubber Tired Loaders	2	10.00	306	203	0.36	Diesel

UnMitigated/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
Equipment Type	lb/day										lb/day					
Off-Highway Trucks	1.6578	15.8068	9.5253	0.0330		0.5759	0.5759		0.5298	0.5298		3,196.5550	3,196.5550	1.0338		3,222.4008
Other Construction Equipment	0.6642	7.8126	4.8410	0.0146		0.2844	0.2844		0.2616	0.2616		1,408.1204	1,408.1204	0.4554		1,419.5057
Rubber Tired Loaders	0.9352	11.0239	4.0886	0.0156		0.3660	0.3660		0.3367	0.3367		1,512.8998	1,512.8998	0.4893		1,525.1324
Total	**3.2572**	**34.6434**	**18.4548**	**0.0632**		**1.2262**	**1.2262**		**1.1281**	**1.1281**		**6,117.5751**	**6,117.5751**	**1.9785**		**6,167.0388**

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