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MEMORANDUM

DATE: June 14, 2023

TO: Jeff Hopkins, Design Manager, Wood Investments Companies, Inc.

FROM: Ronald Brugger, Senior Air Quality Specialist

SUBJECT: Air Quality, Greenhouse Gas Emissions, and Energy Impact Analysis Memorandum for the proposed Apple Bear Commercial Project in Apple Valley, California

INTRODUCTION

This air quality, greenhouse gas (GHG) emissions, and energy impact analysis for the proposed Apple Bear Commercial Project in Apple Valley, San Bernardino County, California (project) has been prepared using methods and assumptions recommended in the Mojave Desert Air Quality Management District's (MDAQMD) *California Environmental Quality Act (CEQA) And Federal Conformity Guidelines* (MDAQMD 2020a). This analysis includes a description of existing regulatory framework and an assessment of project air pollutant emissions, GHG emissions, and energy use. Measures to reduce or eliminate significant impacts are identified, where appropriate.

PROJECT LOCATION

The project site is located at Bear Valley Road near Apple Valley Road in the southwest portion of the Town of Apple Valley, in southwestern San Bernardino County, California. The center of the project site is at latitude 34°28'12.67" N and longitude -117°14'16.85" W at an elevation of approximately 2,878 feet above mean sea level and consists of three parcels (Assessor Parcel Numbers [APNs] 0434-021-10, -35, and -37). Figure 1: Project Location and Vicinity depicts the location of the project site on a regional scale (all figures are provided in Attachment A).

PROJECT DESCRIPTION

The proposed project would develop commercial uses on approximately 8.35 acres, with an additional 0.53 acre of off-site improvements along adjacent roadways in the Town of Apple Valley, as shown in Figure 2. The project would result in the demolition of the existing, vacant residential structure in the northwestern portion of the site, and development of an approximately 23,256-square-foot grocery store, an approximately 5,381-square-foot car wash with a 110-foot car wash tunnel, an approximately 3,546-square-foot fast food restaurant with drive through, an approximately 2,500-square-foot fast food restaurant with drive through, and an approximately 5,060-square-foot multiple tenant commercial/retail building with four attached suites, including at least one speculative restaurant with drive through. Construction of the project is anticipated to

commence in fall 2023 and be completed in fall 2024, resulting in a total construction duration of approximately 12 months.

Sensitive Receptors and Land Uses in the Project Vicinity

Sensitive receptors include residences such as private homes, condominiums, apartments, and living quarters, schools, preschools, daycare centers, in-home daycares, health facilities such as hospitals, long-term care facilities, retirement and nursing homes, community centers, places of worship, parks (excluding trails), prisons, and dormitories.

Existing land uses surrounding the project site include the Apple Valley Towne Center shopping center to the north, undeveloped land immediately to the east with single family homes beyond, a Big Lots Distribution Center to the south, and a Walmart Distribution Center to the west, none of which are considered sensitive receptors. The nearest sensitive receptors to the project site are single-family residential uses 640 feet east of the site and the Apple Valley Post Acute Center (congregate/convalescent care center) 730 feet southwest of the site along Apple Valley Road.

REGIONAL CLIMATE AND AIR QUALITY

The project site is in Apple Valley in San Bernardino County, which is part of the Mojave Desert Air Basin (Basin) and is under the jurisdiction of MDAQMD. This Basin is an assemblage of mountain ranges interspersed with long, broad valleys that often contain dry lakes. Many of the lower mountains that dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor.

Both the State of California (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.

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]
O_3[8]	1-Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	0.070 ppm (137 µg/m³)		0.070 ppm (137 µg/m³)		
Respirable Particulate Matter (PM_{10})[9]	24-Hour	50 µg/m³	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m³		—		
Fine Particulate Matter ($PM_{2.5}$)[9]	24-Hour	—	—	35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	12.0 µg/m³	15 µg/m³	
CO	1-Hour	20 ppm (23 mg/m³)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m³)	—	Non-Dispersive Infrared Photometry (NDIR)
	8-Hour	9.0 ppm (10 mg/m³)		9 ppm (10 mg/m³)	—	
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m³)		—	—	
NO_2[10]	1-Hour	0.18 ppm (339 µg/m³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m³)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m³)		0.053 ppm (100 µg/m³)	Same as Primary Standard	
SO_2[11]	1-Hour	0.25 ppm (655 µg/m³)	Ultraviolet Fluorescence	75 ppb (196 µg/m³)	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3-Hour	—		—	0.5 ppm (1,300 µg/m³)	
	24-Hour	0.04 ppm (105 µg/m³)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30-Day Average	1.5 µg/m³	Atomic Absorption	—	—	High-Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m³ (for certain areas)[13]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m³		
Visibility-Reducing Particles[14]	8-Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24-Hour	25 µg/m³	Ion Chromatography			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24-Hour	0.01 ppm (26 µg/m³)	Gas Chromatography			

Source: CARB *Ambient Air Quality Standards*. May 4, 2016. Website: www.arb.ca.gov/sites/default/files/2020-07/aaqs2.pdf (accessed April 2023).

Footnotes are provided on the following page.

[1] California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1- and 24-hour), NO_2, and PM (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 AAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2] National standards (other than for O_3 and PM and those based on the 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 µg/m³ 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 the 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 that 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] The 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 O_3 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 µg/m³ to 12.0 µg/m³. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m³, as was the annual secondary standard of 15 µg/m³. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m³ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

[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 as 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] 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 µg/m³ as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated as 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, CARB converted both the general statewide 10 mi visibility standard and the Lake Tahoe 30 mi 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
µg/m³ = micrograms per cubic meter
AAQS = ambient air quality standards
CARB = California Air Resources Board
CO = carbon monoxide
EPA = United States Environmental Protection Agency
mg/m³ = milligrams per cubic meter
mi = mile/miles
NO_2 = nitrogen dioxide
O_3 = ozone
PM = particulate matter
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ppb = parts per billion
ppm = parts per million
SO_2 = sulfur dioxide

Table B summarizes the most common health and environmental effects for each of the air pollutants for which there is a national and/or California AAQS, as well as for toxic air contaminants. Because the concentration standards were set at a level that protects public health with an adequate margin of safety (by the United States Environmental Protection Agency [EPA]), these health effects would not occur unless the standards are exceeded by a large margin or for a prolonged period of time. State AAQS are typically more stringent than federal AAQS. 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 (CARB 2022a).

Table B: Summary of Health and Environmental Effects of the Criteria Air Pollutants

Pollutant	Effects on Health and the Environment
Ozone (O_3)	• Respiratory symptoms • Worsening of lung disease leading to premature death • Damage to lung tissue • Crop, forest and ecosystem damage • Damage to a variety of materials, including rubber, plastics, fabrics, paint and metals
$PM_{2.5}$ (particulate matter less than 2.5 microns in aerodynamic diameter)	• Premature death • Hospitalization for worsening of cardiovascular disease • Hospitalization for respiratory disease • Asthma-related emergency room visits • Increased symptoms, increased inhaler usage
PM_{10} (particulate matter less than 10 microns in aerodynamic diameter)	• Premature death & hospitalization, primarily for worsening of respiratory disease • Reduced visibility and material soiling
Nitrogen Oxides (NO_X)	• Lung irritation • Enhanced allergic responses
Carbon Monoxide (CO)	• Chest pain in patients with heart disease • Headache • Light-headedness • Reduced mental alertness
Sulfur Oxides (SO_X)	• Worsening of asthma: increased symptoms, increased medication usage, and emergency room visits
Lead	• Impaired mental functioning in children • Learning disabilities in children • Brain and kidney damage
Hydrogen Sulfide (H_2S)	• Nuisance odor (rotten egg smell) • At high concentrations: headache & breathing difficulties
Sulfate	• Same as $PM_{2.5}$, particularly worsening of asthma and other lung diseases • Reduces visibility
Vinyl Chloride	• Central nervous system effects, such as dizziness, drowsiness & headaches • Long-term exposure: liver damage & liver cancer
Visibility Reducing Particles	• Reduced airport safety, scenic enjoyment, road safety, and discourages tourism
Toxic Air Contaminants About 200 chemicals have been listed as toxic air contaminants	• Cancer • Reproductive and developmental effects • Neurological effects

Source: Common Air Pollutants (CARB 2022a).
CARB = California Air Resources Board

The California Clean Air Act (CCAA) provides MDAQMD 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 emissions of any pollutant. In addition, area-source emissions that are generated when minor sources collectively emit a substantial amount of pollution are also managed by the local air districts. Examples of this would be the motor vehicles at an intersection, at a mall, and on highways. MDAQMD also regulates stationary sources of pollution throughout its jurisdictional area. The California Air Resources Board (CARB) regulates direct emissions from motor vehicles.

Climate/Meteorology

Air quality in the planning area is affected not only by various emission sources (e.g., mobile and industry) but also by atmospheric conditions (e.g., wind speed, wind direction, temperature, and rainfall). As described above, the project site is in the Mojave Desert Air Basin, which is an assemblage of mountain ranges interspersed with long, broad valleys that often contain dry lakes. Prevailing winds in the Basin are out of the west and southwest. These prevailing winds are due to the proximity of the Basin to coastal and central regions and the blocking nature of the Sierra Nevada Mountains to the north; air masses pushed onshore in Southern California by differential heating are channeled through the Basin. The Basin is separated from the Southern California coastal and central California valley regions by mountains (highest elevation is approximately 10,000 feet), whose passes form the main channels for these air masses. The Mojave Desert is bordered on the southwest by the San Bernardino Mountains, separated from the San Gabriel Mountains by the Cajon Pass (4,200 feet). A lesser pass lies between the San Bernardino Mountains and the Little San Bernardino Mountains in the Morongo Valley.

During the summer, the Basin is generally influenced by a Pacific subtropical high cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The Basin is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time they reach the desert. Most desert moisture arrives from infrequent warm, moist, and unstable air masses from the south. The Basin averages between 3 and 7 inches of precipitation per year (from 16 to 30 days with at least 0.01 inch of precipitation). The Basin is classified as a dry hot desert climate, with portions classified as dry very hot desert, to indicate that at least 3 months have maximum average temperatures over 100.4^{o}F.

Snow is common above 5,000 feet in elevation, resulting in moderate snowpack and limited spring runoff. Below 5,000 feet, any precipitation normally occurs as rainfall. Pacific storm fronts normally move into the area from the west, driven by prevailing winds from the west and southwest. During late summer, moist high-pressure systems from the Pacific Ocean collide with rising heated air from desert areas, resulting in brief, high intensity thunderstorms that can cause high winds and localized flash flooding. During the fall and winter months, strong, dry Santa Ana winds from the northeast can cause rapid temperature variations of significant magnitude.

Air Pollution Constituents and Attainment Status

CARB coordinates and oversees both State and federal air pollution control programs in the State. 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. 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 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 the following:

- **Attainment/Unclassified** ("Unclassifiable" in some lists). These basins have never violated the air quality standard of interest or do not have enough monitoring data to establish Attainment or Nonattainment status.

- **Attainment-Maintenance** (national ambient air quality standards [NAAQS] only). These basins violated a NAAQS that is currently in use (were Nonattainment) in or after 1990, but now attain the standard and are officially redesignated as Attainment by the EPA with a Maintenance State Implementation Plan (SIP).

- **Attainment** (usually only for California ambient air quality standards [CAAQS], but sometimes for NAAQS). These basins 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 C lists the attainment status for the criteria pollutants in the Basin.

Table C: Attainment Status of Criteria Pollutants in the Mojave Desert Air Basin

Pollutant	State	Federal
O_3	Nonattainment	Nonattainment[1]
PM_{10}	Nonattainment	Nonattainment[2]
$PM_{2.5}$	Nonattainment[1]	Attainment/Unclassified
CO	Attainment	Attainment/Unclassified
NO_2	Attainment	Attainment/Unclassified
SO_2	Attainment	Attainment/Unclassified
Lead[1]	Attainment	Attainment/Unclassified
All Others	Attainment/Unclassified	N/A

Source: Mojave Desert Air Quality Management District (n.d.-b).

[1] Only the southwest corner of the desert portion of San Bernardino County is Nonattainment

[2] Only the San Bernardino County portion is Nonattainment

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

Local Air Quality

MDAQMD, together with CARB, maintains ambient air quality monitoring stations. The air quality monitoring station that monitors air pollutant data closest to the site is the Victorville Monitoring

Station at 14306 Park Avenue, Victorville, approximately 9.6 miles southwest of the project site. The air quality trends from this station are used to represent the ambient air quality in the project area. The ambient air quality data in Table D show that NO_2 and CO levels are below the applicable State and federal standards. However, PM_{10} and O_3 levels frequently exceed their respective standards and $PM_{2.5}$ levels occasionally exceed the federal 24-hour standard.

Table D: Air Quality Concentrations in the Project Vicinity

Pollutant	Standard	2019	2020	2021
CO				
Maximum 1-hour concentration (ppm)		1.5	1.6	1.5
No. of days exceeded	State: 20 ppm	0	0	0
	Federal: 35 ppm	0	0	0
Maximum 8-hour concentration (ppm)		1.1	1.4	1.0
No. of days exceeded	State: 9 ppm	0	0	0
	Federal: 9 ppm	0	0	0
O_3				
Maximum 1-hour concentration (ppm)		0.104	0.112	0.112
No. of days exceeded	State: 0.09 ppm	3	4	8
Maximum 8-hour concentration (ppm)		0.081	0.094	0.098
No. of days exceeded	State: 0.07 ppm	29	35	34
	Federal: 0.07 ppm	29	35	34
PM_{10}				
Maximum 24-hour concentration ($\mu g/m^3$)		170	261	591
No. of days exceeded	State: 50 $\mu g/m^3$	ND	ND	ND
	Federal: 150 $\mu g/m^3$	2	2	1
Annual avg. concentration ($\mu g/m^3$)		27.0	34.1	33.8
Exceeds Standard?	State: 20 $\mu g/m^3$	Yes	Yes	Yes
$PM_{2.5}$				
Maximum 24-hour concentration ($\mu g/m^3$)		20	48.7	87.1
No. of days exceeded	Federal: 35 $\mu g/m^3$	0	4	1
Annual avg. concentration ($\mu g/m^3$)		7.0	10.4	10.3
Exceeds Standard?	State: 12 $\mu g/m^3$	No	No	No
	Federal: 12 $\mu g/m^3$	No	No	No
NO_2				
Maximum 1-hour concentration (ppb):		56.0	59.4	56.6
No. of days exceeded	State: 180 ppb	0	0	0
	Federal: 100 ppb	0	0	0
Annual avg. concentration (ppb):		11	12	12
Exceeds standard?	State: 30 ppb	No	No	No
	Federal: 53 ppb	No	No	No

Source: iADAM (CARB 2022c).

$\mu g/m^3$ = micrograms per cubic meter
CARB = California Air Resources Board
CO = carbon monoxide
ND = No data available
NO_2 = nitrogen dioxide
O_3 = ozone
$PM_{2.5}$ = particulate matter smaller than 2.5 microns in size
PM_{10} = particulate matter smaller than 10 microns in size
ppb = parts per billion
ppm = parts per million

DESCRIPTION OF GREENHOUSE GASES AND SOURCES

Higher temperatures from excessive concentrations of GHGs in the atmosphere can result in increased mean temperatures and are conducive to air pollution formation and could worsen air quality in California. While climate change may increase the concentration of ground-level ozone, the magnitude of the effect and, therefore, its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would exacerbate air quality. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the State (California Department of Public Health 2014). However, if higher temperatures are accompanied by wetter, rather than drier, conditions, the rains would temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thus reducing the pollution associated with wildfires. 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 climate change are:[1]

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (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, which can cause global warming. 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. Water vapor is a GHG, but it is generally excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes (e.g., oceanic evaporation). For the purposes of this air quality study, the term "GHGs" will refer collectively to the six gases identified in the bulleted list provided above.

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. For example, N_2O is from 265 to 310 times more potent at contributing to global warming than CO_2. GHG emissions are typically measured in terms of metric tons of CO_2 equivalents (MT CO_2e). Table E identifies the GWP for the

[1] The greenhouse gases listed are consistent with the definition in Assembly Bill 32 (Government Code 38505), as discussed later in this section.

three GHGs analyzed in this report. The EPA and the CARB use GWP values from the 2007 Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4). The IPCC has published the 2021 IPCC Sixth Assessment Report (AR6) with updated GWP values.

Table E: Global Warming Potential for Selected Greenhouse Gases

Pollutant	AR4 Values	AR6 Values
Carbon Dioxide (CO_2)	1 (by definition)	1 (by definition)
Methane (CH_4)	25	29.8 ± 11
Nitrous Oxide (N_2O)	298	273 ± 30

Sources: *California's 2017 Climate Change Scoping Plan* (CARB 2017), IPCC Sixth Assessment Report (2021).
[1] The EPA and CARB use global warming potential values from the IPCC Fourth Assessment Report (2007).
AR4 = 2007 IPCC Fourth Assessment Report
AR6 = 2021 IPCC Sixth Assessment Report
CARB = California Air Resources Board
EPA = United States Environmental Protection Agency
IPCC = Intergovernmental Panel on Climate Change

ENERGY BACKGROUND

Energy usage is typically associated with electricity and natural gas consumption and fuel usage, as described below.

Electricity

Electricity is a manmade resource. The production of electricity requires the consumption or conversion of energy resources (including water, wind, oil, gas, coal, solar, geothermal, and nuclear resources) into energy. Electricity is used for a variety of purposes (e.g., lighting, heating, cooling, and refrigeration, and for operating appliances, computers, electronics, machinery, and public transportation systems). The project site is within the service territory of Southern California Edison (SCE). SCE provides electricity to more than 15 million people in a 50,000-square-mile area of Central, coastal, and Southern California (SCE n.d.). According to the California Energy Commission (CEC), total electricity consumption in the SCE service area in 2020 was 83,532.6 gigawatt-hours (GWh) (32,475 GWh for the residential sector and 51,057 GWh for the non-residential sector). Total electricity consumption in San Bernardino County in 2020 was 15,968.5 GWh (15,968,515,536 kilowatt-hours [kWh]) (CEC n.d.-a).

Natural Gas

Natural gas is a non-renewable fossil fuel. Fossil fuels form when layers of decomposing plant and animal matter are exposed to intense heat and pressure under the surface of the Earth over millions of years. Natural gas is a combustible mixture of hydrocarbon compounds (primarily methane) used as a fuel source. Natural gas is found in naturally occurring reservoirs in deep underground rock formations. Natural gas is used for a variety of uses (e.g., heating buildings, generating electricity, and powering appliances such as stoves, washing machines and dryers, gas fireplaces, and gas grills).

The Southern California Gas Company (SoCalGas) is the natural gas service provider for the project sites. SoCalGas provides natural gas to approximately 21.8 million people in a 24,000-square-mile

service area throughout Central and Southern California, from Visalia to the Mexican border (SoCalGas n.d.). According to the CEC, total natural gas consumption in the SoCalGas service area in 2020 was 5,231 million therms, including 2,426 million therms for the residential sector and 2,294 million therms for the non-residential sector. Total natural gas consumption in San Bernardino County in 2020 was more than 527 million therms (527,236,428 therms) (CEC n.d.-b).

Fuel

Petroleum is also a non-renewable fossil fuel. Petroleum is a thick, flammable, yellow-to-black mixture of gaseous, liquid, and solid hydrocarbons that occurs naturally beneath the earth's surface. Petroleum is primarily recovered by oil drilling. It is refined into a large number of consumer products, primarily fuel oil, gasoline, and diesel. The average fuel economy for light-duty vehicles (automobiles, pickups, vans, and SUVs) in the United States has steadily increased from about 14.9 miles per gallon (mpg) in 1980 to 22.9 mpg in 2020.

Gasoline is the most used transportation fuel in California, with 97 percent of all gasoline consumed by light-duty cars, pickup trucks, and sport utility vehicles. According to the most recent data available, total gasoline consumption in California was 289,918 thousand barrels, or 1,464.7 trillion British thermal units (BTU) in 2020. Of the total gasoline consumption, 273,289 thousand barrels or 1,380.7 trillion BTU were consumed for transportation (CEC n.d.-c). Based on fuel consumption obtained from CARB's California Emissions Factor Model, Version 2021 (EMFAC2021), approximately 321.6 million gallons of diesel and approximately 915.5 million gallons of gasoline will be consumed from vehicle trips in San Bernardino County in 2022.

REGULATORY FRAMEWORK

Federal Regulations

Pursuant to the federal Clean Air Act (CAA) of 1970, the EPA established the 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 AAQS, or criteria, for outdoor concentrations 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. The Supreme Court ruled that GHGs fit within the CAA's definition of a pollutant and that the EPA did not have a valid rationale for not regulating GHGs. In December 2009, the EPA issued an endangerment finding for GHGs under the CAA.

On December 7, 2009, the EPA Administrator signed a final action under the CAA, finding that six GHGs (i.e., CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) constitute a threat to public health and welfare and that the combined emissions from motor vehicles cause and contribute to GCC.

On September 15, 2011, the EPA and the United States Department of Transportation (USDOT) issued final rule for the first national standards to improve fuel efficiency of medium- and heavy-duty trucks and buses, model years 2014 to 2018. For combination tractors, the agencies proposed engine and vehicle standards that would achieve up to a 20 percent reduction from the model year 2014 in fuel consumption by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies proposed separate gasoline and diesel truck standards, which would achieve up to a 10 percent reduction from the model year 2014 for gasoline vehicles and a 15 percent reduction for diesel vehicles (12 and 17 percent, respectively, if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10 percent reduction from model year 2014 in fuel consumption. On October 25, 2016, the EPA and USDOT issued Phase 2 of the national standards to improve fuel efficiency standards for medium- and heavy-duty trucks and buses for model years 2021 to 2027 to achieve vehicle fuel savings as high as 25 percent, depending on the vehicle category.

On August 2, 2018, the previous Administration released a notice of proposed rulemaking, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021–2026 Passenger Cars and Light Trucks (SAFE Vehicles Rule) to amend the Corporate Average Fuel Economy (CAFE) and GHG emission standards established in 2012 for model years 2021 through 2026. The SAFE Vehicle Rule would decrease fuel economy and would withdraw the California Waiver for the California Advanced Clean Car program, Zero Emissions Vehicle mandate, and GHG emission standards for model years 2021 through 2026.

The current administration withdrew portions of the SAFE Rule, concluding that the SAFE Rule overstepped the agency's legal authority and finalized updated CAFE Standards for model years 2024 through 2026. The final rule establishes standards that would require an industry-wide fleet average of approximately 49 mpg for passenger cars and light trucks in model year 2026, by increasing fuel efficiency by 8 percent annually for model years 2024 and 2025, and 10 percent annually for model years 2026. The agency projects the final standards will save consumers nearly $1,400 in total fuel expenses over the lifetimes of vehicles produced in these model years and avoid the consumption of about 234 billion gallons of gas between model years 2030 to 2050. The National Highway Transportation Safety Administration also projects that the standards will cut GHGs from the atmosphere, reduce air pollution, and reduce the country's dependence on oil.

State Agencies and Regulations

California Air Resources Board

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, CARB has worked with the public, the business sector, and local governments to find solutions to the State's air pollution problems. California adopted the California Clean Air Act in 1988. CARB administers the California ambient air quality standards for the 10 air pollutants designated in the California Clean Air Act. 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.

The California Global Warming Solutions Act of 2006, widely known as Assembly Bill (AB) 32, requires CARB to develop and enforce regulations for the reporting and verification of statewide GHG emissions. CARB was directed to set a statewide GHG emissions limit and set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner.

In 2016, the Legislature passed, and Governor Jerry Brown signed, Senate Bill (SB) 32 and AB 197. SB 32 affirms the importance of addressing climate change by codifying into statute the GHG emissions reductions target of at least 40 percent below 1990 levels by 2030 contained in Governor Brown's April 2015 Executive Order B-30-15. SB 32 builds on AB 32 and keeps California on the path toward achieving the State's 2050 objective of reducing emissions to 80 percent below 1990 levels, consistent with an Intergovernmental Panel on Climate Change analysis of the emissions trajectory that would stabilize atmospheric GHG concentrations at 450 parts per million (ppm) CO_2e and reduce the likelihood of catastrophic impacts from climate change. The companion bill to SB 32, AB 197, provides additional direction to CARB related to the adoption of strategies to reduce GHG emissions.

In November 2022, CARB adopted the "2022 Scoping Plan for Achieving Carbon Neutrality" (Scoping Plan) (CARB 2022d) that lays out a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels no later than 2045, as directed by AB 1279. The actions and outcomes in the plan will achieve significant reductions in fossil fuel combustion by deploying clean technologies and fuels, further reductions in short-lived climate pollutants, support for sustainable development, increased action on natural and working lands to reduce emissions and sequester carbon, and the capture and storage of carbon.

Senate Bill 97 and State CEQA Guidelines

In August 2007, the Legislature adopted SB 97, requiring the Office of Planning and Research (OPR) to prepare and transmit new California Environmental Quality Act (CEQA) guidelines for the mitigation of GHG emissions or the effects of GHG emissions to the California Natural Resources Agency. OPR submitted its proposed guidelines to the Secretary for Natural Resources on April 13, 2009, and the *State CEQA Guidelines* amendments were adopted on December 30, 2009 and became effective on March 18, 2010.

The *State CEQA Guidelines* amendments do not specify a threshold of significance for GHG emissions or prescribe assessment methodologies or specific mitigation measures. Instead, the amendments encourage lead agencies to consider many factors in performing a CEQA analysis but rely on the lead agencies in making their own significance determinations based upon substantial evidence. The *State CEQA Guidelines* amendments also encourage public agencies to make use of programmatic mitigation plans and programs from which to tier when they perform individual project analyses.

The *State CEQA Guidelines* amendments require a lead agency to make a good-faith effort based on the extent possible on scientific and factual data to describe, calculate, or estimate the amount of GHG emissions resulting from a project. The *State CEQA Guidelines* amendments give discretion to the lead agency whether to (1) use a model or methodology to quantify GHG emissions resulting from a project and which model or methodology to use and/or (2) rely on a qualitative analysis or

performance-based standards. The California Natural Resources Agency is required to periodically update the guidelines to incorporate new information or criteria established by CARB pursuant to AB 32.

California Green Building Standards

The California Green Building Standards Code, which is Part 11 of the California Code of Regulations, is commonly referred to as the CALGreen Code. The State updates this code every 3 years. The first edition of the CALGreen Code was released in 2008 and contained only voluntary standards. The 2022 CALGreen Code was updated in 2020, became effective on January 1, 2023, and applies to non-residential and residential developments. The CALGreen Code contains requirements for construction site selection, stormwater control during construction, construction waste reduction, indoor water use reduction, material selection, natural resource conservation, site irrigation conservation, and more. The CALGreen Code provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. The CALGreen Code also requires building commissioning, which is a process for the verification that all building systems, such as heating and cooling equipment and lighting systems, function at their maximum efficiency.

The CEC is the State's primary energy policy and planning agency, and it plays a critical role in creating a clean and modern energy system. SB 1389 (Chapter 568, Statutes of 2002) requires the CEC to prepare an Integrated Energy Policy Report biennially at a minimum. The report should include a description of the international energy market prospects and an evaluation of its export promotion activities.

AB 2076 (passed in 2000, Shelley, Chapter 936, Statutes of 2000) directs the CARB and the CEC to develop and adopt recommendations for the Governor and the Legislature on a strategy to reduce California's dependence on petroleum.

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 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 vehicle miles traveled and accommodate pedestrian and bicycle access.

The CEC adopted the 2021 Integrated Energy Policy Report on March 23, 2021. The 2021 Integrated Energy Policy Report provides the results of the CEC's assessment of a variety of issues, including ensuring that the State has sufficient, reliable, and safe energy infrastructure to meet current and future energy demands; monitoring publicly owned utilities' progress toward achieving 10-year energy efficiency targets; defining and including zero-net-energy goals in State building standards; overcoming challenges to increased use of geothermal heat pump/ground loop technologies and procurement of biomethane; using demand response to meet California's energy needs and integrate renewable technologies; removing barriers to bioenergy development; planning for

California's electricity infrastructure needs given the potential retirement of power plants; estimating new generation costs for utility-scale renewable and fossil-fueled generation; planning for new or upgraded transmission infrastructure; monitoring utilities' progress in implementing past recommendations related to nuclear power plants; tracking natural gas market trends; implementing the Alternative and Renewable Fuel and Vehicle Technology Program; addressing the vulnerability of California's energy supply and demand infrastructure to the effects of climate change; and planning for potential electricity system needs in 2030 (CEC 2021).

Regional Air Quality Planning Framework

SCAG is a council of governments for Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. SCAG is a regional planning agency and a forum for regional issues relating to transportation, the economy and community development, and the environment. Although SCAG is not an air quality management agency, it is responsible for developing transportation, land use, and energy conservation measures that affect air quality.

On September 3, 2020, the Regional Council of SCAG adopted Connect SoCal, also known as the *2020–2045 Regional Transportation Plan/Sustainable Communities Strategy: A Plan for Mobility, Accessibility, Sustainability, and High Quality of Life* (a.k.a., 2020–2045 RTP/SCS). The 2020–2045 RTP/SCS is a long-range visioning plan that balances future mobility and housing needs with economic, environmental, and public health goals. Connect SoCal embodies a collective vision for the region's future and is developed with input from local governments, county transportation commissions, tribal governments, non-profit organizations, businesses, and local stakeholders within the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura.

Mojave Desert Air Quality Management District

MDAQMD is the agency principally responsible for comprehensive air pollution control in the Basin. To that end, MDAQMD, a regional agency, works directly with SCAG, county transportation commissions, and local governments, and cooperates actively with State and federal government agencies. MDAQMD develops air quality-related rules and regulations, establishes permitting requirements, inspects emissions sources, and provides regulatory enforcement through such measures as educational programs or fines, when necessary.

San Bernardino County, including Apple Valley, is in non-attainment for O_3 and particulate matter. To meet the requirements for basins that are in nonattainment, the MDAQMD has established attainment plans for O_3, PM_{10}, and $PM_{2.5}$.

Regional Air Quality Management Plan

The MDAQMD is responsible for monitoring air quality, as well as planning, implementing, and enforcing programs designed to attain and maintain CAAQS and NAAQS in the Mojave Desert Air Basin. All areas designated as non-attainment under the CCAA are required to prepare plans showing how they will meet the air quality standards. The MDAQMD prepared Air Quality Attainment Plans (AQAP) to address CAA and CCAA requirements by identifying policies and control measures. The SCAG assists by preparing the transportation portion of an AQAP. The applicable

AQAP is the 2017 MDAQMD Federal 75 ppb (parts per billion) Ozone Attainment Plan (Western Mojave Desert Nonattainment Area) (MDAQMD 2017).

The MDAQMD Rules & Regulations website (MDAQMD n.d.-a) lists the current attainment plans for the region. Consistency with the applicable AQAP would be achieved if the project complies with all applicable MDAQMD rules and regulations and is consistent with the growth forecasts in the applicable plan. Consistency with growth forecasts can be established by demonstrating that the project is consistent with the land use plan that was used to generate the growth forecast.

The MDAQMD provides the *California Environmental Quality Act (CEQA) And Federal Conformity Guidelines* (MDAQMD 2020a) to facilitate projects compliance with CEQA. MDAQMD also recommends using approved models to calculate emissions from land use projects, such as the California Emissions Estimator Model (CalEEMod). These recommendations were followed in the preparation of this analysis.

The following MDAQMD rules and regulations would apply to the proposed project:

- MDAQMD Rule 403 (MDAQMD 2020b) requires projects to incorporate fugitive dust control measures.
- MDAQMD Rule 1113 (MDAQMD 2020c) limits the volatile organic compound (VOC) content of architectural coatings.

Local Regulations

Town of Apple Valley 2009 General Plan

The Town of Apple Valley (Town) addresses air quality and GHG emissions in Section 3, Environmental Resources (Town of Apple Valley 2009). This section includes goals and policies that work to pursue sustainability and resilience by making resource-efficient choices to conserve water, energy, and materials, improve air quality, and adjust to changing conditions. The following air quality related policies are applicable to the proposed project:

- The Town shall coordinate land use planning efforts to assure that sensitive receptors are reasonably separated from polluting point sources including mineral extraction operations.
- All projects that have the potential to generate significant levels of air pollution shall be required to provide detailed impact analyses and design mitigation measures that incorporate the most advanced technological methods available. Prior to the issuance of grading or demolition permits, the Town shall review and determine the effectiveness of proposed mitigation measures and set forth additional measures as needed.
- The use of clean and/or renewable alternative energy sources for transportation, heating and cooling, and construction shall be encouraged by the Town.

- Future residential, commercial, and industrial development and remodeling projects shall strive to exceed Title 24 standards by 15% and/or achieve LEED certification or similar performance standards for buildings.

- The Town shall participate in the San Bernardino Associated Governments' Climate Action Plan, including assisting in providing data and background information, and implementing greenhouse gas reduction strategies established in the Plan, when complete.

Town of Apple Valley Climate Action Plan Update

The 2019 Climate Action Plan (CAP) Update (Town of Apple Valley 2021) is Apple Valley's comprehensive strategy to reduce GHG emissions in response to the challenges of climate change. The CAP, which was originally adopted in 2010, was designed to be revised every 3 years to respond to advances in technology, emerging policy reforms, and to build upon the successes of Apple Valley's efforts to reduce greenhouse gas emissions. The 2019 CAP Update represents the third update to the original document, and the information herein supersedes previous updates. To achieve consistency with federal and State GHG reduction goals, the 2019 CAP Update sets GHG emissions reduction targets of 15 percent below 2005 levels by 2020 and 40 percent below 2005 levels by 2030.

The following policies are applicable to the proposed project:

- Building and site plan designs shall ensure that the project energy efficiencies meet applicable California Title 24 Energy Efficiency Standards. Verification of increased energy efficiencies shall be documented in Title 24 Compliance Reports provided by the applicant and reviewed and approved by the Town prior to the issuance of the first building permit. Any combination of the following design features may be used to fulfill this measure provided that the total increase in efficiency meets or exceeds Title 24 standards:

    - Buildings shall meet or exceed California Title 24 Energy Efficiency performance standards for water heating and space heating and cooling.

    - Increase in insulation such that heat transfer and thermal bridging is minimized.

    - Limit air leakage through the structure or within the heating and cooling distribution system to minimize energy consumption.

    - Incorporate dual-paned or other energy efficient windows.

    - Incorporate energy efficient space heating and cooling equipment.

    - Incorporate the use of tankless water heaters in all residential units and community buildings.

    - Promote building design that will incorporate solar control in an effort to minimize direct sunlight upon windows. A combination of design features including roof eaves, recessed windows, "eyebrow" shades and shade trees shall be considered.

- Interior and exterior energy efficient lighting which exceeds the California Title 24 Energy Efficiency performance standards shall be installed, as deemed acceptable by Town. Automatic devices to turn off lights when they are not needed shall be implemented.
- To the extent that they are compatible with landscaping guidelines established by the Town, shade producing trees, particularly those that shade paved surfaces such as streets and parking lots and buildings shall be planted at the Project site.
- Paint and surface color palette for the project shall emphasize light and off-white colors which will reflect heat away from the buildings.
- All buildings shall be designed to accommodate renewable energy sources, such as photovoltaic solar electricity systems, and wind energy systems on properties greater than 2 acres, appropriate to their architectural design.
- Consideration shall be given to using LED lighting for all outdoor uses (i.e. buildings, pathways, landscaping, carports).

- To reduce the project's energy use from the grid:
  - Install solar panels/photovoltaic systems sufficient to provide electric power and heat water within the project, and/or
  - Install other clean energy system sufficient to provide electric power and heat water within the project, and/or
  - Install solar or photovoltaic systems on new roofs whether on residential, commercial, or industrial buildings.
- Recycle and/or salvage non-hazardous construction and demolition waste and develop and implement a construction waste management plan quantifying the reduction in the waste stream.

THRESHOLDS OF SIGNIFICANCE

Certain air districts (e.g., MDAQMD) have created guidelines and requirements to conduct air quality analyses. MDAQMD's current guidelines, the *California Environmental Quality Act (CEQA) And Federal Conformity Guidelines* (MDAQMD 2020a), were followed in this assessment of air quality and climate impacts for the proposed project.

Based on the *State CEQA Guidelines*, 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 pollutants concentrations, or conflict with adopted environmental plans and goals of the community in which it is located.

Air Quality

MDAQMD 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.

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 Thresholds (lbs/day)					
	VOCs	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_X
Construction	137	137	548	82	65	137
Operations	137	137	548	82	65	137

Source: MDAQMD Air Quality Significance Thresholds (MDAQMD 2020a)

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
MDAQMD = Mojave Desert Air Quality Management District
SO_X = sulfur oxides
VOCs = volatile organic compounds

Projects in the Basin with construction- or operation-related emissions that exceed any of their respective emissions thresholds would be considered significant under MDAQMD guidelines. These thresholds, which MDAQMD developed and which 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 site 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 ppm
- California State 8-hour CO standard of 9 ppm

Greenhouse Gases

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 *State CEQA Guidelines* includes significance thresholds for GHG emissions. A project would normally have a significant effect on the environment if it would do either of the following:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment

- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs

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 California.

This analysis will consider whether the project is compliant with the Apple Valley 2019 CAP Update, which is a qualified GHG emissions reduction plan in accordance with *State CEQA Guidelines* Section 15183.5. The Apple Valley 2019 CAP Update supports the achievement of individual GHG reduction measures as well as the Town's overall GHG reduction goals. In addition, it furthers the Town's sustainability goals and policies that encourage sustainable development and aim to conserve and reduce the consumption of resources, such as energy and water, among others. If the project is determined to be compliant with the Apple Valley 2019 CAP Update, then impacts related to the GHG emissions resulting from that project will be considered less than significant.

Energy

While no quantitative thresholds related to energy are included in the *State CEQA Guidelines*, the *State CEQA Guidelines* indicate that a project would normally have a significant adverse energy impact if the project would do either of the following:

- Result in a 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.

For the purposes of this analysis, impacts to energy resources will be considered significant if the project would result in the wasteful, inefficient, or unnecessary consumption of fuel or energy; and/or conversely, if the project would not incorporate renewable energy or energy efficiency measures into building design, equipment use, transportation, or other project features.

IMPACTS AND MITIGATION MEASURES

This section evaluates the impacts related to air quality, GHG emissions, and energy use associated with the proposed project. Mitigation measures are identified where necessary to reduce impacts to a less than significant level.

Air Quality

Emissions would include criteria air pollutants and GHG emissions. The sections below describe the proposed project's consistency with applicable air quality plans, estimated project emissions, and the significance of impacts with respect to MDAQMD thresholds.

Consistency with Applicable Air Quality Plans

An air quality plan describes the pollution control strategies to be undertaken by a city or county in a region classified as nonattainment to meet the requirements of the federal CAA. The main purpose of the plan is to bring an area into compliance with the requirements of federal and State ambient air quality standards. The applicable air quality plan is the MDAQMD AQAP - *2017 MDAQMD Federal 75 ppb (parts per billion) Ozone Attainment Plan (Western Mojave Desert Nonattainment Area)* (MDAQMD 2017). For development projects, such as the proposed project, consistency can be determined if growth forecasts in the plan are consistent with land uses associated with the proposed development.

The AQAP emissions projections were predicated on the aggregation of individual emissions predictions from jurisdictions throughout the MDAQMD. The Town of Apple Valley provided emissions predictions based on the General Plan, which breaks down the Town into regions and Specific Plan areas. The project is zoned General Commercial, allowing for a broad range of clean manufacturing and warehousing uses, including manufacturing facilities with showrooms and offices, regional warehouse facilities, and support services for manufacturing and warehouses. Uses can range from manufacturing and warehousing to offices and retail facilities that support the employee population within the NAVISP. Uses that generate excessive noise or other environmental impacts are not permitted in the NAVISP. All uses are to be conducted within enclosed structures. Outdoor storage may be permitted, if completely screened from view. Furthermore, the I-SP land use designation of the project is consistent with the land use assumptions of the Town's General Plan, upon which the AQAP emissions projections were predicated. Therefore, the project would not affect the regional emissions inventory or conflict with strategies in the AQAP.

Criteria Pollutant Analysis

The Mojave Desert Air Basin is designated as nonattainment for O_3 and PM_{10} for federal standards and nonattainment for O_3, PM_{10}, and $PM_{2.5}$ for State standards. The MDAQMD's nonattainment status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant.

In developing thresholds of significance for air pollutants, MDAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions.

Construction Emissions. 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.

Demolition activities include demolition of one residential building and ancillary shed. Construction activities would also include the removal of existing on-site vegetation; excavation; grading; paving; development of the proposed buildings and parking areas; and the installation of lighting, landscaping, and utility connections. During grading, on-site soils would be excavated and recompacted in accordance with the 2022 California Building Code (CBC) to accommodate the development of the proposed buildings and parking areas. The proposed earthwork for the project assumes the site would be balanced (no import or export needed).

Construction parking and staging would occur on the project site. However, it is possible there would be temporary lane closures and/or detours necessary along existing roadway, including Bear Valley Road to the north and Flying Feather Road to the east during project construction. Construction hours would conform to the Apple Valley Development Code standards specified in Section 9.73.060(F)(1) and be limited to 7:00 a.m. to 7:00 p.m. Monday through Friday. According to the project conceptual grading plans, the soil is expected to balance on-site.

Construction of the project is anticipated to commence in fall 2023 and be completed in fall 2024, resulting in a total construction duration of approximately 12 months.

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 the on-road vehicle trips (e.g., worker, debris-hauling, and vendor trips). CalEEMod defaults are assumed for the construction activities, off-road equipment, and on-road construction fleet mix and trip lengths. Table G lists the tentative project construction schedule.

Table G: Tentative Project Construction Schedule

Phase Name	Phase Start Date	Phase End Date	Number of Days
Demolition	9/7/2023	9/21/2023	10
Site Preparation	9/22/2023	9/28/2023	5
Grading	9/24/2023	10/8/2023	10
Building Construction	10/9/2023	8/16/2024	225
Architectural Coating	8/17/2024	9/20/2024	131
Paving	2/23/2024	8/25/2024	25

Source: Estimated by LSA Associates, Inc. from the project information provided (March 2023).

CalEEMod (Version 2022.1) was used to develop the construction equipment inventory and calculate the construction emissions. Table H lists the estimated construction equipment that would be used during project construction as estimated by CalEEMod default values. The CalEEMod output is included as Attachment B.

The emissions rates shown in Table I 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 and the greater of summer and winter emissions. No exceedances of any criteria pollutants are expected. Standard measures are documented in the CalEEMod output in Attachment B.

Table H: 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
Demolition	Excavators	3	8	36	0.38
	Rubber Tired Dozers	2	8	367	0.4
	Concrete/Industrial Saws	1	8	33	0.73
Site Preparation	Rubber Tired Dozers	3	8	367	0.4
	Tractors/Loaders/Backhoes	4	8	84	0.37
Grading	Graders	1	8	148	0.41
	Rubber Tired Dozers	1	8	367	0.4
	Tractors/Loaders/Backhoes	3	8	84	0.37
	Excavators	1	8	36	0.38
Building Construction	Cranes	1	7	367	0.29
	Forklifts	3	8	82	0.2
	Tractors/Loaders/Backhoes	3	7	84	0.37
	Generator Sets	1	8	14	0.74
	Welders	1	8	46	0.45
Architectural Coating	Air Compressors	1	6	37	0.48
Paving	Pavers	2	8	81	0.42
	Rollers	2	6	36	0.38
	Paving Equipment	2	6	89	0.36

Source: Compiled by LSA using CalEEMod defaults (April 2023).
CalEEMod = California Emissions Estimator Model

Table I: Short-Term Regional Construction Emissions

Construction Phase	Total Regional Pollutant Emissions (lbs/day)							
	VOCs	NO_X	CO	SO_X	Fugitive PM_{10}	Exhaust PM_{10}	Fugitive $PM_{2.5}$	Exhaust $PM_{2.5}$
Demolition	3	28	25	<1	<1	1	<1	1
Site Preparation	4	40	37	<1	8	2	4	2
Grading	2	20	21	<1	3	<1	1	<1
Building Construction	1	12	14	<1	<1	<1	<1	<1
Architectural Coating	2	<1	1	<1	<1	<1	<1	<1
Paving	2	8	11	<1	<1	<1	<1	<1
Peak Daily	**4**	**40**	**37**	**<1**	**10**		**6**	
MDAQMD Threshold	**137**	**137**	**548**	**137**	**82**		**65**	
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**		**No**	

Source: Compiled by LSA (April 2023).
It was assumed that the architectural coatings would be applied during the building construction phase. PM_{10} and $PM_{2.5}$ fugitive emissions are from the Mitigated results; the only "mitigation" measures applied in this modeling are required dust control measures per MDAQMD Rule 403.
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
MDAQMD = Mojave Desert Air Quality Management District
SO_X = sulfur oxides
VOCs = volatile organic compounds

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.

The construction calculations prepared for this project assumed that dust control measures (watering a minimum of two times daily consistent with MDAQMD Rule 403) would be employed to reduce emissions of fugitive dust during site grading. Furthermore, all construction would need to comply with MDAQMD 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 PM10 emissions from construction:

- 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 feet (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 miles per hour (mph) or less.

These Rule 403 measures were incorporated in the CalEEMod analysis.

Architectural Coatings. Architectural coatings contain VOCs that are part of the O_3 precursors. Based on the proposed project, it is estimated that application of the architectural coatings for the proposed peak construction day would result in a peak of 4 pounds per day (lbs/day) of

VOCs (2 lbs/day from architectural coating application and 2 lbs/day from concurrent paving). Therefore, VOC emissions from architectural-coating applications would not exceed the MDAQMD VOC threshold of 137 lbs/day.

Odors from Construction Activities. Heavy-duty equipment in the project area during construction would emit odors, primarily from the equipment exhaust. However, the construction-produced odors 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.

MDAQMD 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 proposed uses are not anticipated to emit any objectionable odors. Therefore, objectionable odors posing a health risk to potential on-site and existing off-site uses would not occur as a result of the proposed project.

Construction Emissions Conclusions. Table I shows that daily regional construction emissions would not exceed the daily thresholds of any criteria pollutant emissions thresholds established by MDAQMD; thus, during construction, there would be no air quality impacts.

Operational Emissions. Long-term air pollutant emission impacts are those associated with mobile sources (e.g., vehicle trips), energy sources (e.g., electricity and natural gas), and area sources (e.g., architectural coatings and the use of landscape maintenance equipment) related to the proposed project.

The proposed project would generate emissions from daily operations. The project *Traffic Impact Study* (LSA 2023) determined that the project would generate 5,120 vehicle trips daily. Emissions from vehicle operations include exhaust and PM_{10}. PM_{10} emissions result from running exhaust, tire and brake wear, and the entrainment of dust into the atmosphere from vehicles traveling on paved roadways. Entrainment of PM_{10} occurs when vehicle tires pulverize small rocks and pavement and the vehicle wakes generate airborne dust. The contribution of tire and brake wear is small compared to the other PM emission processes.

Energy source emissions result from activities in buildings for which electricity and natural gas are used. The quantity of emissions is the product of usage intensity (i.e., the amount of electricity or natural gas) and the emission factor of the fuel source. Major sources of energy demand include building mechanical systems, such as heating and air conditioning, lighting, and plug-in electronics, such as computers. Greater building or appliance efficiency reduces the amount of energy for a given activity and thus lowers the resultant emissions. The emission factor is determined by the fuel

source, with cleaner energy sources, such as renewable energy, producing fewer emissions than conventional sources.

Typically, area source emissions consist of direct sources of air emissions at the project site, including architectural coatings, the use of consumer products, and the use of landscape maintenance equipment.

Emission estimates for operation of the project were calculated using CalEEMod[1] and are shown in Table J, below. The results shown in Table J indicate the project would not exceed the significance criteria for daily VOC, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$ emissions; therefore, operation of the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or State AAQS.

Emission calculations sheets are attached (Attachment B).

Table J: Project Operation Emissions (lbs/day)

Source Category	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Area Source Emissions	1	<1	2	<1	<1	<1
Energy Source Emissions	<1	<1	<1	<1	<1	<1
Mobile Source Emissions	28	28	238	<1	16	3
Total Project Emissions	**30**	**29**	**240**	**1**	**16**	**3**
MDAQMD Significance Threshold	**137**	**137**	**548**	**137**	**82**	**65**
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Compiled by LSA (April 2023).
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
MDAQMD = Mojave Desert Air Quality Management District
SO_X = sulfur oxides
VOC = volatile organic compounds

Objectionable Odors. MDAQMD addresses odor criteria within the CEQA Handbook. The MDAQMD has not established a rule or standard regarding odor emissions, rather, the MDAQMD has a nuisance rule: "Any project with the potential to frequently expose members of the public to objectionable odors should be deemed to have a significant impact."

The proposed project is not known to include any activities or operations that would generate objectionable odors, nor are there any sensitive receptors near the project site. Therefore, the proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

[1] Note that the CalEEMod analysis is based on a total square footage that is slightly larger than that which is currently proposed.

Greenhouse Gas Impacts

This section discusses the project's impacts related to the release of GHG emissions for the construction and operational phases of the project.

Generation of Greenhouse Gas Emissions

Construction and operation of the proposed project would generate GHG emissions, with the majority of energy consumption (and associated generation of GHG emissions) occurring during the project's operation.

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

Construction Activities. Construction activities would produce combustion emissions from various sources. During construction, GHGs would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically use fossil-based fuels to operate. 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. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change.

Neither the Apple Valley 2019 CAP Update nor the MDAQMD provides a separate GHG significance threshold for construction emissions. However, lead agencies are required to quantify and disclose GHG emissions that would occur during construction. In addition, other air districts recommend amortizing GHG emissions over the life of the project based on the total GHG emissions for construction activities divided by the project life (i.e., 30 years) then adding that number to the annual operational phase GHG emissions. As shown in Table K, the project construction emissions would total 343 MT CO_2e and the amortized rate would be 11 MT CO_2e. (See the CalEEMod output in Attachment B for details.)

Table K: Construction Greenhouse Gas Emissions

Construction Phase	Total Emissions per Phase (MT)			Total Emissions per Phase (MT CO_2e)
	CO_2	CH_4	N_2O	
Demolition	17	<1	<1	18
Site Preparation	13	<1	<1	13
Grading	14	<1	<1	14
Building Construction	284	<1	<1	286
Architectural Coating	10	<1	<1	10
Paving	19	<1	<1	20
Total Emissions for the Entire Construction Process				**343**
Construction Emissions Amortized over 30 years				**11**

Source: Compiled by LSA (April 2023).
CH_4 = methane
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
MT CO_2e = metric tons of carbon dioxide equivalent
MT = metric tons
N_2O = nitrous oxide

Operational GHG Emissions. Long-term GHG emissions are typically generated from mobile sources (e.g., cars, trucks, and buses), area sources (e.g., maintenance activities and landscaping), indirect emissions from sources associated with energy consumption, waste sources (land filling and waste disposal), and water sources (water supply and conveyance, treatment, and distribution). Mobile-source GHG emissions would include project-generated vehicle trips to and from the project site. Area-source emissions would be associated with activities such as landscaping and maintenance on the project site. Waste source emissions generated by the proposed project include energy generated by land filling and other methods of disposal related to transporting and managing project-generated waste.

As shown in Table L, the project would generate 9,429 MT CO_2e per year.

Table L: Long-Term Operational Greenhouse Gas Emissions

Source	Pollutant Emissions (MT per year)					
	Bio-CO_2	**nBio-CO_2**	**Total CO_2**	**CH_4**	**N_2O**	**CO_2e**
Area	0	<1	<1	<1	<1	<1
Energy	0	452	452	<1	<1	454
Mobile	0	7,869	7,869	<1	<1	8,007
Water	6	29.4	36	<1	<1	57
Waste	28	<1	28	2.8	<1	98
Refrigerant						801
Total Operational Emissions	**35**	**8,351**	**8,385**	**4**	**<1**	**9,418**
Amortized Construction Emissions						**11**
Total Annual Emissions						**9,429**

Source: Compiled by LSA (April 2023).
Bio-CO_2 = biologically generated CO_2
CH_4 = methane
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
MT = metric tons
N_2O = nitrous oxide
nBio-CO_2 = non-biologically generated CO_2

Project GHG Impact Assessment

As demonstrated in Tables K and L, based on projections made using CalEEMod Version 2022.1, the project is expected to generate 9,418 MT of CO_2e per year. As described in the Town's General Plan Housing Element, 16.6% of the Town's population works in Apple Valley. The remaining 83% work elsewhere, which could suggest a jobs-housing imbalance within the Town limits. As such, it is expected that the jobs created by the project would be sourced from the local workforce and would not require people to relocate from surrounding communities. Given the existing demand for jobs in the Town, it is likely that all of the jobs created by the project would be filled by existing residents of Apple Valley. It is therefore assumed that the Town's 2030 population would be 84,535 as analyzed in the 2019 CAP Update.

Based on a population of 84,535, Table M shows that in order for the Town to meet the 2030 emissions reduction target, the GHG emissions would have to be no more than 5.32 MTCO_2e per capita. The table also shows that with implementation of the 2019 CAP Update reduction measures, the Town expects to go beyond the established emissions target, reducing forecasted emissions to 410,922 MT CO_2e per year or 4.86 tons per capita. The 2030 emissions forecast with 2019 CAP

Update measures accounts for community emissions, including industrial projects. It is therefore likely that the project's estimated annual emissions of 9,429 MT CO_2e would already be covered by the 2030 emissions forecast. However, assuming a commercial development like the proposed project was not accounted for in the 2019 CAP Update 2030 forecast, and to ensure a conservative analysis, the project's emissions were added to the existing forecast. As shown in Table M, the total annual emissions from the project and existing 2030 forecast would be 420,340.00 $MTCO_2e$, or 4.97 tons per capita. Both the total and per capita emissions meet the 2019 CAP Update target for 2030 of 40% below the 2005 baseline. The Town-wide emissions in 2030, including the project, would therefore meet the 2019 CAP Update GHG emissions reduction target.

Table M: Project Emissions and 2019 CAP Update Reduction Target

Target/Scenario	Forecast ($MTCO_2e$)	Population	$MTCO_2e$ Per Capita
CAP 2030 forecast w/CAP measures	410,922	84,535	4.86
Project emissions (per year)	9,429	84,535	--
Total	**420,351**	**84,535**	**4.97**
CAP 2030 target (40% below baseline)	449,347	84,535	5.32
Would GHG Emissions Exceed the CAP 2030 Target?			No

Source: Town of Apple Valley's General Plan Housing Element and Climate Action Plan

To ensure that the project's GHG emissions are reduced consistent with the goals of the 2019 CAP Update, the project would be subject to applicable reduction measures from the 2019 CAP Update. The project's consistency with applicable reduction measures is Table N.

Table N: Project Consistency with Town of Apple Valley Climate Action Plan

Measures	Consistency Determination
ND-9. During project construction, encourage on-site and off-road construction equipment to utilize biodiesel fuel (a minimum of B20), except for equipment where use of biodiesel fuel would void the equipment warranty. As a conservative measure, no reduction in GHG emissions was taken for the implementation of this measure as it is unknown if biodiesel can be readily applied to the various pieces of construction equipment that will be necessary for the project.	**Consistent**. The Alternative Diesel Fuels (ADF) regulation has made more readily available low carbon, and often times lower polluting, diesel fuel substitutes to enter the commercial market in California. The MDAQMD, though the construction permit process, requires information be provided on the use of such fuel.
ND-11. Install pedestrian, bicycle and/or equestrian trails connecting project to school(s), commercial project(s) or transit.	**Consistent**. Sidewalks connecting to Bear Valley Road sidewalks will be constructed.
ND-12. Building and site plan designs shall ensure that the project energy efficiencies meet applicable California Title 24 Energy Efficiency Standards. Verification of increased energy efficiencies shall be documented in Title 24 Compliance Reports provided by the applicant and reviewed and approved by the Town prior to the issuance of the first building permit. Any combination of the following design features may be used to fulfill this measure provided that- the total increase in efficiency meets or exceeds Title 24 standards: ● Buildings shall meet or exceed California Title 24 Energy Efficiency performance standards for water heating and space heating and cooling. ● Increase in insulation such that heat transfer and thermal bridging is minimized.	**Consistent**. Buildings will be designed and constructed to meet California Title 24 energy requirements. Requirements will be met using a combination of the building envelopes, HVAC systems and electrical systems.

Table N: Project Consistency with Town of Apple Valley Climate Action Plan

Measures	Consistency Determination
● Limit air leakage through the structure or within the heating and cooling distribution system to minimize energy consumption. ● Incorporate dual-paned or other energy efficient windows. ● Incorporate energy efficient space heating and cooling equipment. ● Incorporate the use of tankless water heaters in all residential units and community buildings. ● Promote building design that will incorporate solar control in an effort to minimize direct sunlight upon windows. A combination of design features including roof eaves, recessed windows, "eyebrow" shades and shade trees shall be considered. ● Interior and exterior energy efficient lighting which exceeds the California Title 24 Energy Efficiency performance standards shall be installed, as deemed acceptable by Town. Automatic devices to turn off lights when they are not needed shall be implemented. ● To the extent that they are compatible with landscaping guidelines established by the Town, shade producing trees, particularly those that shade paved surfaces such as streets and parking lots and buildings shall be planted at the Project site. ● Paint and surface color palette for the Project shall emphasize light and off-white colors which will reflect heat away from the buildings. ● All buildings shall be designed to accommodate renewable energy sources, such as photovoltaic solar electricity systems, and wind energy systems on properties greater than 2 acres, appropriate to their architectural design. ● Consideration shall be given to using LED lighting for all outdoor uses (i.e., buildings, pathways, landscaping, carports).	
ND-16. Install Energy Star appliances and energy efficient fixtures.	**Consistent**. Energy star appliances will be installed as applicable.
ND-17. Install all CFL or LED light bulbs.	**Consistent**. LED light bulbs will be installed throughout the project.
ND-18. Install common area electric vehicle charging station(s) and secure bicycle racks.	**Consistent**. Electrical vehicle charging and secure bicycle racks will be installed as required per city ordinances/California title 24 energy code.
ND-24. Recycle and/or salvage non-hazardous construction and demolition waste and develop and implement a construction waste management plan quantifying the reduction in the waste stream.	**Consistent**. The project shall comply with Section 5.408 of the 2019 California Green Building Code Standards, which requires new development projects to submit and implement a construction waste management plan in order to reduce the amount of construction waste transported to landfills
ND-25. Reuse construction waste in project features (e.g., shattered concrete or asphalt can be ground and used in walkways and parking lots).	**Consistent**. CALGreen requires covered projects to recycle and/or salvage for reuse a minimum 65% of the nonhazardous construction and demolition waste or meet a local construction and demolition waste management ordinance, whichever is more stringent.

Table N: Project Consistency with Town of Apple Valley Climate Action Plan

Measures	Consistency Determination
ND-26. Facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills by providing easily accessible areas that serve each building and are dedicated to the collection and storage of paper, cardboard, glass, plastics, and metals.	**Consistent**. Trash enclosures will be provided easily accessible from the buildings and recycling collection containers will be provided.

Source: Town of Apple Valley Climate Action Plan
MDAQMD = Mojave Desert Air Quality Management District

Conflict with an Applicable Plan, Policy, or Regulation

Town of Apple Valley Climate Action Plan 2019 Update

The reduction measures in Apple Valley's 2019 CAP Update are divided into three broad categories: Town Municipal Operational Measures, Community Operational Measures, and New Development Measures. Because the project is a "New Development", it is measured against the measures applicable to the project as shown Table N.

Conclusion

Table N shows that project would be compliant with the Town's 2019 CAP Update and with the addition of the project's emissions, the project Town-wide CO_2e emissions would continue to meet the 2030 reduction target. Thus, the project's impacts related to GHG emissions would be less than significant and no mitigation would be necessary.

Energy

The proposed project would increase the demand for electricity, natural gas, and gasoline when compared to the existing condition of the site. The discussion and analysis provided below is based on the data included in the CalEEMod output, which is included as Attachment B.

Construction-Period Energy Use

The anticipated construction schedule assumes that the proposed project would be built over approximately 12 months. The proposed project would require demolition, site preparation, grading, building construction, paving, and architectural coating during construction.

Construction of the proposed project would require energy for the manufacture and transportation of building materials and for preparation of the site for grading activities and building construction. Petroleum fuels (e.g., diesel and gasoline) would be the primary sources of energy for these activities.

Construction activities are not anticipated to result in an inefficient use of energy because gasoline and diesel fuel would be supplied by construction contractors who would conserve the use of their supplies to minimize their costs on the proposed project. 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 includes both direct and indirect sources of emissions. Direct sources of emissions include on-site natural gas usage for heating, while indirect sources include electricity generated by off-site power plants. Natural gas use in CalEEMod is measured in units of a thousand British thermal units (kBTU) per year; however, this analysis converts the results to natural gas in units of therms. Electricity use in CalEEMod is measured in kWh per year.

CalEEMod divides building electricity and natural gas use into uses that are subject to Title 24 standards and those that are not. For electricity, Title 24 uses include the major building envelope systems covered by Part 6 (California Energy Code) of Title 24 (e.g., space heating, space cooling, water heating, and ventilation). Non-Title 24 uses include all other end uses (e.g., appliances, electronics, and other miscellaneous plug-in uses). Because some lighting is not considered as part of the building envelope energy budget, CalEEMod considers lighting as a separate electricity use category.

For natural gas, uses are likewise categorized as Title 24 or non-Title 24. Title 24 uses include building heating and hot water end uses. Non-Title 24 natural gas uses include appliances.

Table O shows the estimated potential increased electricity, natural gas, gasoline, and diesel demand associated with the proposed project. The electricity and natural gas rates are from the CalEEMod analysis, while the gasoline and diesel rates are based on the traffic analysis (see Attachment C) in conjunction with DOT fuel efficiency data.

Table O: Estimated Annual Energy Use of the Proposed Project

Land Use	Electricity Use (kWh/yr)	Natural Gas Use (kBTU/yr)	Gasoline (gal/yr)	Diesel (gal/yr)
Commercial	1,507,865	1,662,111	732,861	513,941

Source: Compiled by LSA (April 2023).
gal/yr = gallons per year
kBTU/yr = thousand British thermal units per year
kWh/yr = kilowatt-hours

As shown in Table O, the estimated potential increased electricity demand associated with the proposed project is 1,507,865 kWh per year. According to the California Energy Commission (CEC), total electricity consumption in the SCE service area in 2021 was 103,045 GWh. Of this total, San Bernardino County consumed 16,180.8 GWh or 16,180,811,158 kilowatt-hours (California Energy Commission n.d.-a). Therefore, electricity demand associated with the proposed project would be approximately 0.01 percent of San Bernardino County's total electricity demand.

Also shown in Table O, the estimated potential increased natural gas demand associated with the proposed project is 1,662,111 kBTU per year or 16,621 therms. According to the CEC, total natural gas consumption in the SoCalGas service area in 2021 was 6,755 million therms, while San Bernardino County consumed 561,360,617 therms (CEC n.d.-b). Therefore, natural gas demand associated with the proposed project would be approximately 0.003 percent of San Bernardino County's total natural gas demand.

Furthermore, the proposed project would result in energy usage associated with gasoline and diesel to fuel project-related trips. The average fuel economy for light-duty vehicles (automobiles, pickups, vans, and sport utility vehicles) in the United States has steadily increased, from about 14.9 mpg in 1980 to 22.2 mpg in 2019 (DOT 2021). The average fuel economy for heavy-duty trucks in the United States has also steadily increased, from 5.7 mpg in 2013 to a projected 8.0 mpg in 2021 (CEC 2015).

Using the EPA gasoline fuel economy estimates for 2019, the California diesel fuel economy estimates for 2022, and the traffic data from the project traffic analyses, the proposed project would result in the annual consumption of 732,861 gallons of gasoline and 513,941 gallons of diesel fuel. In 2019, vehicles in California consumed approximately 15.6 billion gallons of gasoline and 3.8 billion gallons of diesel fuel (CEC n.d.-c). Therefore, gasoline and diesel demand generated by vehicle trips associated with the proposed project would be a minimal fraction of gasoline and diesel fuel consumption in California and, by extension, in San Bernardino County.

In addition, vehicles associated with trips to and from the project site would be subject to fuel economy and efficiency standards, which are applicable throughout the State. As such, the fuel efficiency of vehicles associated with project operations would increase throughout the life of the proposed project. Therefore, implementation of the proposed project would not result in a substantial increase in transportation-related energy uses.

Energy Use Summary

As described above, the proposed project would not result in the wasteful, inefficient, or unnecessary consumption of fuel or energy and would incorporate renewable energy or energy efficiency measures into building design, equipment uses, and transportation. Impacts would be less than significant, and no mitigation measures would be necessary.

Conflict with or Obstruction of a State or Local Plan for Renewable Energy or Energy Efficiency

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 impacts 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 *2021 Integrated Energy Policy Report*. In addition, the proposed project would comply with Title 24 and CALGreen standards. Thus, as shown above, the proposed project would avoid or reduce the inefficient, wasteful, and unnecessary consumption of energy and would not result in any irreversible or irretrievable commitments of energy. Therefore, the proposed project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation. Impacts would be less than significant, and no mitigation measures would be necessary.

CONCLUSION

Based on the analysis presented above, operational emissions associated with the proposed project would not exceed MDAQMD established significance thresholds. The proposed project is not

expected to produce significant emissions that would affect nearby sensitive receptors. The proposed project would also not result in objectionable odors affecting a substantial number of people. GHG emissions released during construction and operation of the project would be compliant with the Town's 2019 CAP Update and would not be cumulatively considerable. Additionally, the project would not conflict with the goals and objectives of a State or regional plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions, nor result in the wasteful, inefficient, or unnecessary consumption of energy resources.

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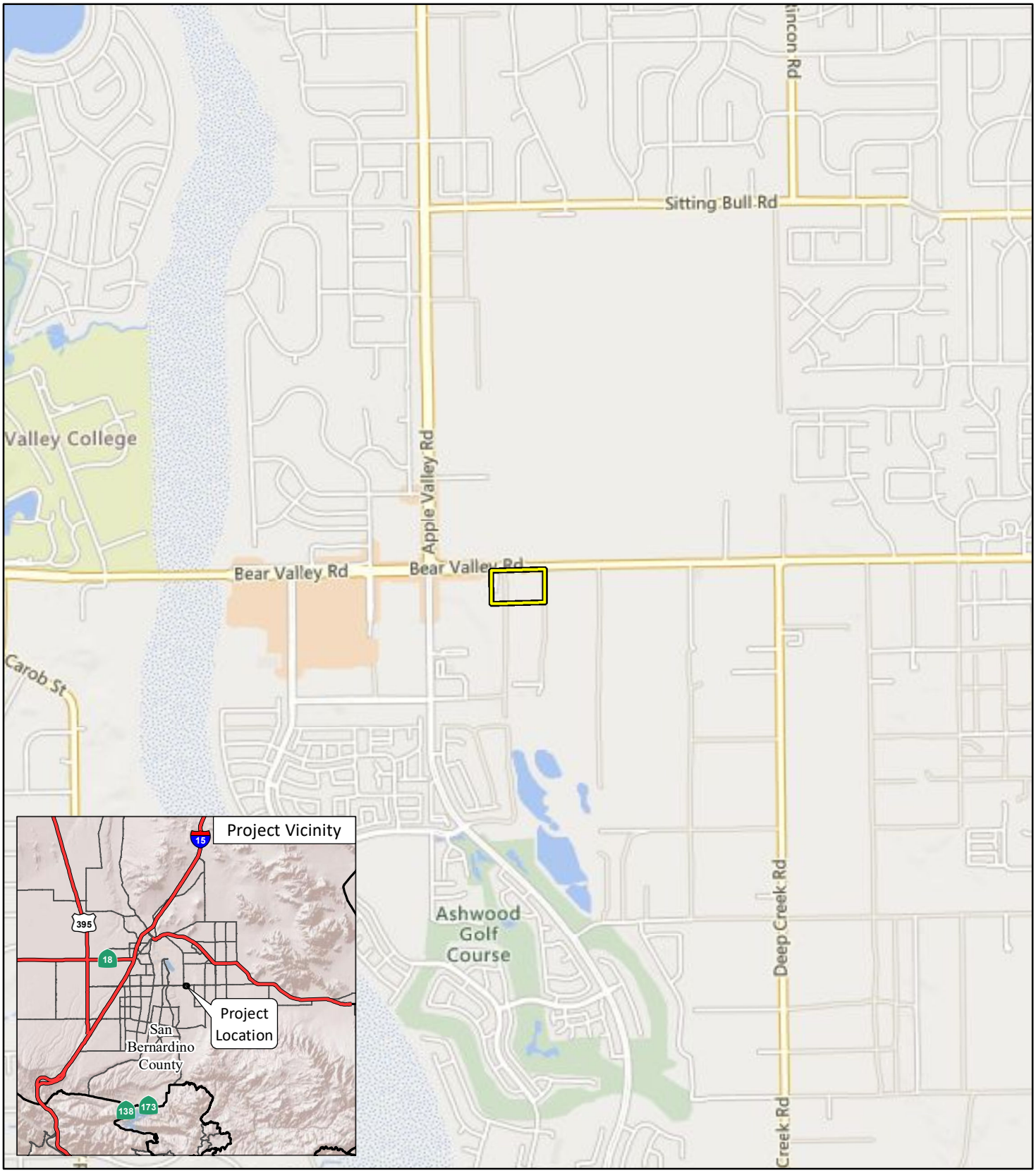
Attachments: A – Figures
B – CalEEMod Output
C – Fuel Usage Worksheet

ATTACHMENT A

FIGURES



LSA

LEGEND

Project Location

FIGURE 1

N

0 1000 2000

FEET

SOURCE: Bing (2021)

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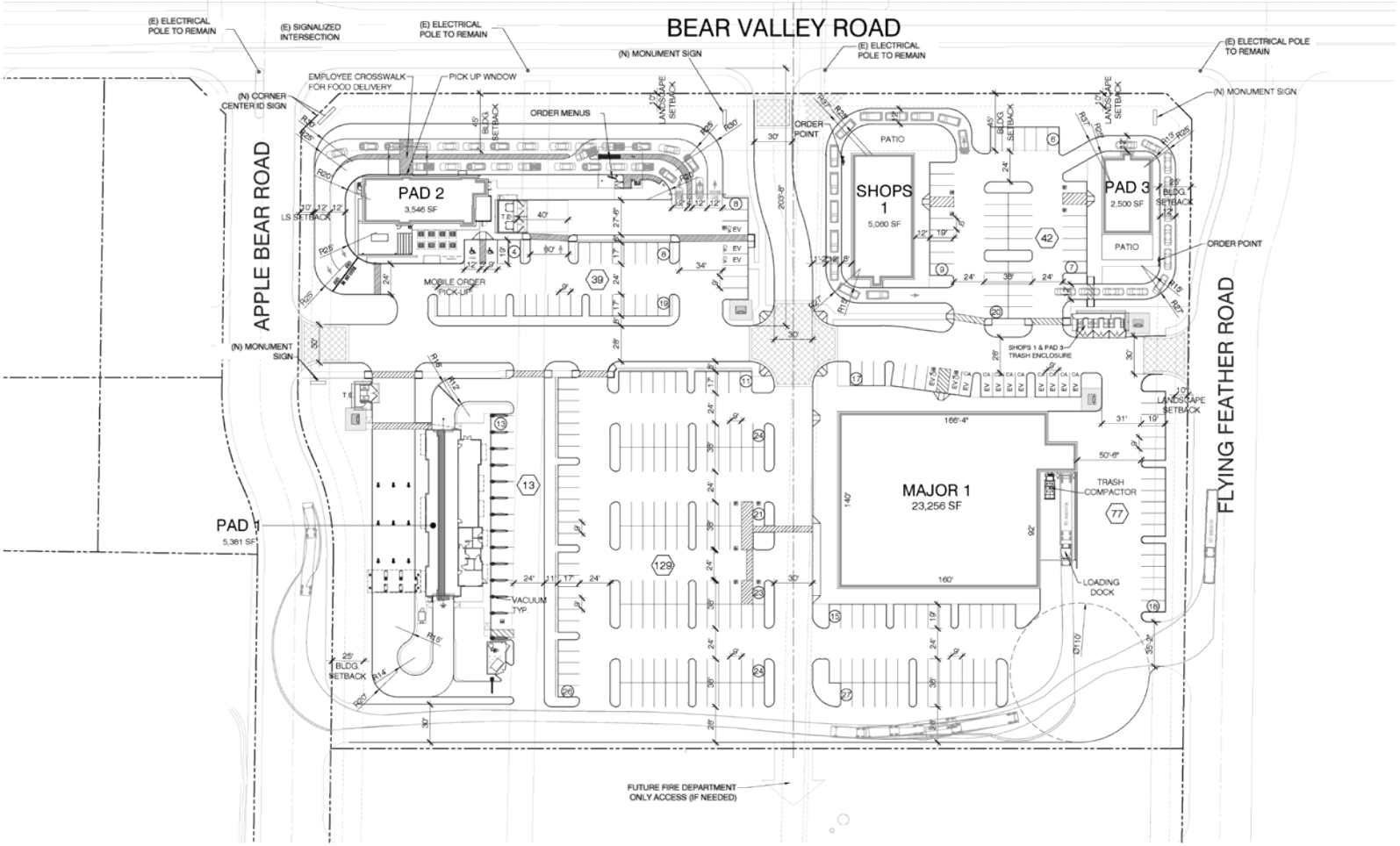
Apple Bear Commercial Project

Project Location and Vicinity



LSA

FIGURE 2

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0 50 100

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Apple Bear Commercial Project

Conceptual Site Plan

SOURCE: MCG Architecture, December 2022.

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ATTACHMENT B

CALEEMOD OUTPUT

Apple Bear Commercial (WDN2201) Custom Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Apple Bear Commercial (WDN2201)
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.80
Precipitation (days)	12.8
Location	34.470699400833816, -117.2373456513449
County	San Bernardino-Mojave Desert
City	Apple Valley
Air District	Mojave Desert AQMD
Air Basin	Mojave Desert
TAZ	5113
EDFZ	10
Electric Utility	Southern California Edison
Gas Utility	Southwest Gas Corp.

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Supermarket	23.0	1000sqft	0.00	23,256	32,115	0.00	—	—
Fast Food Restaurant with Drive Thru	7.00	1000sqft	0.00	7,360	10,158	0.00	—	—

Fast Food Restaurant w/o Drive Thru	4.00	1000sqft	0.00	3,750	5,179	0.00	—	—
User Defined Retail	5.00	User Defined Unit	0.00	5,381	7,431	0.00	—	Car Wash
Parking Lot	269	1000sqft	6.18	0.00	0.00	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.19	59.9	58.4	0.08	2.75	10.9	13.6	2.53	5.38	7.90	—	8,748	8,748	0.36	0.08	2.09	8,783
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.41	20.1	20.7	0.03	0.94	2.96	3.90	0.87	1.38	2.25	—	3,160	3,160	0.13	0.06	0.04	3,172
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.45	6.04	7.58	0.01	0.26	0.24	0.41	0.24	0.10	0.27	—	1,432	1,432	0.06	0.03	0.32	1,442
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.26	1.10	1.38	< 0.005	0.05	0.04	0.08	0.04	0.02	0.05	—	237	237	0.01	< 0.005	0.05	239
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Threshold	137	137	548	137	—	—	82.0	—	—	64.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	137	137	548	137	—	—	82.0	—	—	64.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	6.19	59.9	58.4	0.08	2.75	10.9	13.6	2.53	5.38	7.90	—	8,748	8,748	0.36	0.08	2.09	8,783
2024	3.71	12.4	15.9	0.03	0.53	0.27	0.81	0.49	0.07	0.56	—	2,990	2,990	0.11	0.06	1.54	3,011
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	2.12	20.1	20.7	0.03	0.94	2.96	3.90	0.87	1.38	2.25	—	3,160	3,160	0.13	0.06	0.04	3,172
2024	3.41	12.5	15.4	0.03	0.53	0.27	0.81	0.49	0.07	0.56	—	2,962	2,962	0.11	0.06	0.04	2,981
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.41	3.85	4.10	0.01	0.17	0.24	0.41	0.16	0.10	0.27	—	728	728	0.03	0.01	0.14	733
2024	1.45	6.04	7.58	0.01	0.26	0.13	0.39	0.24	0.03	0.27	—	1,432	1,432	0.06	0.03	0.32	1,442
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.08	0.70	0.75	< 0.005	0.03	0.04	0.08	0.03	0.02	0.05	—	121	121	< 0.005	< 0.005	0.02	121
2024	0.26	1.10	1.38	< 0.005	0.05	0.02	0.07	0.04	0.01	0.05	—	237	237	0.01	< 0.005	0.05	239

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	29.7	26.7	240	0.50	0.45	15.8	16.2	0.42	2.77	3.20	208	53,919	54,128	23.0	2.34	5,041	60,441
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	25.6	28.8	184	0.46	0.45	15.8	16.2	0.42	2.77	3.19	208	49,407	49,616	23.1	2.42	4,844	55,759
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	26.0	29.5	201	0.47	0.45	15.8	16.2	0.42	2.77	3.19	208	50,438	50,647	23.1	2.46	4,926	56,885
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.75	5.39	36.7	0.09	0.08	2.88	2.96	0.08	0.51	0.58	34.5	8,351	8,385	3.83	0.41	816	9,418
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	137	137	548	137	—	—	82.0	—	—	65.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	137	137	548	137	—	—	82.0	—	—	65.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	28.4	26.2	238	0.50	0.41	15.8	16.2	0.39	2.77	3.16	—	51,004	51,004	1.90	2.22	202	51,916
Area	1.23	0.01	1.73	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.11	7.11	< 0.005	< 0.005	—	7.32
Energy	0.02	0.45	0.38	< 0.005	0.03	—	0.03	0.03	—	0.03	—	2,730	2,730	0.18	0.02	—	2,740
Water	—	—	—	—	—	—	—	—	—	—	39.1	178	217	4.02	0.10	—	346
Waste	—	—	—	—	—	—	—	—	—	—	169	0.00	169	16.9	0.00	—	592
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4,839	4,839
Total	29.7	26.7	240	0.50	0.45	15.8	16.2	0.42	2.77	3.20	208	53,919	54,128	23.0	2.34	5,041	60,441
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	24.7	28.3	184	0.46	0.41	15.8	16.2	0.39	2.77	3.16	—	46,499	46,499	1.99	2.31	5.24	47,242
Area	0.94	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.02	0.45	0.38	< 0.005	0.03	—	0.03	0.03	—	0.03	—	2,730	2,730	0.18	0.02	—	2,740
Water	—	—	—	—	—	—	—	—	—	—	39.1	178	217	4.02	0.10	—	346
Waste	—	—	—	—	—	—	—	—	—	—	169	0.00	169	16.9	0.00	—	592
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4,839	4,839
Total	25.6	28.8	184	0.46	0.45	15.8	16.2	0.42	2.77	3.19	208	49,407	49,616	23.1	2.42	4,844	55,759
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	24.9	29.1	200	0.47	0.41	15.8	16.2	0.39	2.77	3.16	—	47,527	47,527	2.02	2.35	87.3	48,364
Area	1.08	0.01	0.85	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.51	3.51	< 0.005	< 0.005	—	3.61
Energy	0.02	0.45	0.38	< 0.005	0.03	—	0.03	0.03	—	0.03	—	2,730	2,730	0.18	0.02	—	2,740
Water	—	—	—	—	—	—	—	—	—	—	39.1	178	217	4.02	0.10	—	346
Waste	—	—	—	—	—	—	—	—	—	—	169	0.00	169	16.9	0.00	—	592
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4,839	4,839

Total	26.0	29.5	201	0.47	0.45	15.8	16.2	0.42	2.77	3.19	208	50,438	50,647	23.1	2.46	4,926	56,885
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.55	5.31	36.5	0.09	0.08	2.88	2.95	0.07	0.51	0.58	—	7,869	7,869	0.33	0.39	14.5	8,007
Area	0.20	< 0.005	0.16	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.58	0.58	< 0.005	< 0.005	—	0.60
Energy	< 0.005	0.08	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	452	452	0.03	< 0.005	—	454
Water	—	—	—	—	—	—	—	—	—	—	6.47	29.4	35.9	0.67	0.02	—	57.3
Waste	—	—	—	—	—	—	—	—	—	—	28.0	0.00	28.0	2.80	0.00	—	98.0
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	801	801
Total	4.75	5.39	36.7	0.09	0.08	2.88	2.96	0.08	0.51	0.58	34.5	8,351	8,385	3.83	0.41	816	9,418

3. Construction Emissions Details

3.1. Demolition (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.84	27.3	23.5	0.03	1.20	—	1.20	1.10	—	1.10	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	0.15	0.15	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.08	0.75	0.64	< 0.005	0.03	—	0.03	0.03	—	0.03	—	93.8	93.8	< 0.005	< 0.005	—	94.2
Demolition	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.14	0.12	< 0.005	0.01	—	0.01	0.01	—	0.01	—	15.5	15.5	< 0.005	< 0.005	—	15.6
Demolition	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	1.47	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	228	228	0.01	0.01	0.96	232
Vendor	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
Hauling	< 0.005	0.23	0.05	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	198	198	< 0.005	0.03	0.42	208
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.69	5.69	< 0.005	< 0.005	0.01	5.77
Vendor	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
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.44	5.44	< 0.005	< 0.005	< 0.005	5.69
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.94	0.94	< 0.005	< 0.005	< 0.005	0.96
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.90	0.90	< 0.005	< 0.005	< 0.005	0.94

3.3. Site Preparation (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.95	39.7	35.5	0.05	1.81	—	1.81	1.66	—	1.66	—	5,295	5,295	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	7.67	7.67	—	3.94	3.94	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.54	0.49	< 0.005	0.02	—	0.02	0.02	—	0.02	—	72.5	72.5	< 0.005	< 0.005	—	72.8
Dust From Material Movement	—	—	—	—	—	0.11	0.11	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.10	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.0	12.0	< 0.005	< 0.005	—	12.1

Dust From Material Movement	—	—	—	—	—	0.02	0.02	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.11	0.11	1.72	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	266	266	0.01	0.01	1.12	270
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.32	3.32	< 0.005	< 0.005	0.01	3.37
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.55	0.55	< 0.005	< 0.005	< 0.005	0.56
Vendor	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
Hauling	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

3.5. Grading (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.04	20.0	19.7	0.03	0.94	—	0.94	0.87	—	0.87	—	2,958	2,958	0.12	0.02	—	2,968
Dust From Material Movement	—	—	—	—	—	2.76	2.76	—	1.34	1.34	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.04	20.0	19.7	0.03	0.94	—	0.94	0.87	—	0.87	—	2,958	2,958	0.12	0.02	—	2,968
Dust From Material Movement	—	—	—	—	—	2.76	2.76	—	1.34	1.34	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.55	0.54	< 0.005	0.03	—	0.03	0.02	—	0.02	—	81.0	81.0	< 0.005	< 0.005	—	81.3
Dust From Material Movement	—	—	—	—	—	0.08	0.08	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.10	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	13.4	13.4	< 0.005	< 0.005	—	13.5

Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.09	1.47	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	228	228	0.01	0.01	0.96	232
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.10	0.99	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	202	202	0.01	0.01	0.02	204
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.69	5.69	< 0.005	< 0.005	0.01	5.77
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.94	0.94	< 0.005	< 0.005	< 0.005	0.96
Vendor	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
Hauling	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

3.7. Building Construction (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.26	11.8	13.2	0.02	0.55	—	0.55	0.51	—	0.51	—	2,397	2,397	0.10	0.02	—	2,406
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.21	1.94	2.17	< 0.005	0.09	—	0.09	0.08	—	0.08	—	394	394	0.02	< 0.005	—	395
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.35	0.40	< 0.005	0.02	—	0.02	0.02	—	0.02	—	65.2	65.2	< 0.005	< 0.005	—	65.5
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.09	0.91	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	186	186	0.01	0.01	0.02	188
Vendor	0.01	0.24	0.11	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	215	215	< 0.005	0.03	0.01	224

Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.02	0.17	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	31.5	31.5	< 0.005	< 0.005	0.06	31.9
Vendor	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	35.3	35.3	< 0.005	< 0.005	0.04	36.8
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.21	5.21	< 0.005	< 0.005	0.01	5.29
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	5.85	5.85	< 0.005	< 0.005	0.01	6.09
Hauling	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

3.9. Building Construction (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.20	11.2	13.1	0.02	0.50	—	0.50	0.46	—	0.46	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.20	11.2	13.1	0.02	0.50	—	0.50	0.46	—	0.46	—	2,398	2,398	0.10	0.02	—	2,406
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.54	5.03	5.88	0.01	0.22	—	0.22	0.21	—	0.21	—	1,074	1,074	0.04	0.01	—	1,078
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.92	1.07	< 0.005	0.04	—	0.04	0.04	—	0.04	—	178	178	0.01	< 0.005	—	179
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	1.25	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	206	206	0.01	0.01	0.81	209
Vendor	0.01	0.22	0.10	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	211	211	< 0.005	0.03	0.57	220
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.09	0.84	0.00	0.00	0.18	0.18	0.00	0.04	0.04	—	182	182	0.01	0.01	0.02	185
Vendor	0.01	0.23	0.10	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	212	212	< 0.005	0.03	0.01	220
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.04	0.42	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	84.1	84.1	< 0.005	< 0.005	0.16	85.3
Vendor	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.03	< 0.005	0.01	0.01	—	94.8	94.8	< 0.005	0.01	0.11	98.6
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.08	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.9	13.9	< 0.005	< 0.005	0.03	14.1
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.7	15.7	< 0.005	< 0.005	0.02	16.3
Hauling	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

3.11. Paving (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.85	7.81	10.0	0.01	0.39	—	0.39	0.36	—	0.36	—	1,512	1,512	0.06	0.01	—	1,517
Paving	0.65	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.54	0.69	< 0.005	0.03	—	0.03	0.02	—	0.02	—	104	104	< 0.005	< 0.005	—	104
Paving	0.04	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.10	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	17.1	17.1	< 0.005	< 0.005	—	17.2
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.09	0.08	1.35	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	224	224	0.01	0.01	0.87	227
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.9	13.9	< 0.005	< 0.005	0.03	14.1
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.31	2.31	< 0.005	< 0.005	< 0.005	2.34
Vendor	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
Hauling	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

3.13. Architectural Coating (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.91	1.15	< 0.005	0.03	—	0.03	0.03	—	0.03	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	1.98	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.91	1.15	< 0.005	0.03	—	0.03	0.03	—	0.03	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	1.98	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.33	0.41	< 0.005	0.01	—	0.01	0.01	—	0.01	—	47.9	47.9	< 0.005	< 0.005	—	48.1
Architectural Coatings	0.71	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.06	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.93	7.93	< 0.005	< 0.005	—	7.96
Architectural Coatings	0.13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.01	0.25	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	41.2	41.2	< 0.005	< 0.005	0.16	41.8
Vendor	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
Hauling	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.02	0.17	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	36.5	36.5	< 0.005	< 0.005	< 0.005	36.9
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	13.5	13.5	< 0.005	< 0.005	0.03	13.7
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.23	2.23	< 0.005	< 0.005	< 0.005	2.26
Vendor	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
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	9.20	8.49	77.1	0.16	0.13	5.10	5.24	0.13	0.90	1.02	—	16,517	16,517	0.61	0.72	65.5	16,812

Fast Food Restaurant with Drive Thru	9.07	8.37	76.0	0.16	0.13	5.03	5.16	0.12	0.88	1.01	—	16,277	16,277	0.61	0.71	64.5	16,568
Fast Food Restaurant w/o Drive Thru	4.45	4.11	37.3	0.08	0.06	2.47	2.53	0.06	0.43	0.49	—	7,989	7,989	0.30	0.35	31.7	8,132
User Defined Retail	5.69	5.25	47.7	0.10	0.08	3.16	3.24	0.08	0.56	0.63	—	10,221	10,221	0.38	0.45	40.5	10,403
Parking Lot	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
Total	28.4	26.2	238	0.50	0.41	15.8	16.2	0.39	2.77	3.16	—	51,004	51,004	1.90	2.22	202	51,916
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	7.99	9.17	59.6	0.15	0.13	5.10	5.24	0.13	0.90	1.02	—	15,058	15,058	0.64	0.75	1.70	15,299
Fast Food Restaurant with Drive Thru	7.87	9.04	58.7	0.15	0.13	5.03	5.16	0.12	0.88	1.01	—	14,840	14,840	0.63	0.74	1.67	15,077
Fast Food Restaurant w/o Drive Thru	3.86	4.44	28.8	0.07	0.06	2.47	2.53	0.06	0.43	0.49	—	7,284	7,284	0.31	0.36	0.82	7,400
User Defined Retail	4.94	5.67	36.9	0.09	0.08	3.16	3.24	0.08	0.56	0.63	—	9,318	9,318	0.40	0.46	1.05	9,467
Parking Lot	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
Total	24.7	28.3	184	0.46	0.41	15.8	16.2	0.39	2.77	3.16	—	46,499	46,499	1.99	2.31	5.24	47,242
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	1.47	1.72	11.8	0.03	0.02	0.93	0.96	0.02	0.16	0.19	—	2,548	2,548	0.11	0.13	4.68	2,593

Fast Food Restaurant with Drive Thru	1.45	1.69	11.6	0.03	0.02	0.92	0.94	0.02	0.16	0.18	—	2,511	2,511	0.11	0.12	4.61	2,555
Fast Food Restaurant w/o Drive Thru	0.71	0.83	5.71	0.01	0.01	0.45	0.46	0.01	0.08	0.09	—	1,233	1,233	0.05	0.06	2.26	1,254
User Defined Retail	0.91	1.06	7.31	0.02	0.02	0.58	0.59	0.01	0.10	0.12	—	1,577	1,577	0.07	0.08	2.90	1,605
Parking Lot	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
Total	4.55	5.31	36.5	0.09	0.08	2.88	2.95	0.07	0.51	0.58	—	7,869	7,869	0.33	0.39	14.5	8,007

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	—	1,094	1,094	0.07	0.01	—	1,098
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	376	376	0.02	< 0.005	—	378
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	192	192	0.01	< 0.005	—	192

User Defined Retail	—	—	—	—	—	—	—	—	—	—	—	192	192	0.01	< 0.005	—	193
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	343	343	0.02	< 0.005	—	345
Total	—	—	—	—	—	—	—	—	—	—	—	2,198	2,198	0.14	0.02	—	2,206
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	—	1,094	1,094	0.07	0.01	—	1,098
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	376	376	0.02	< 0.005	—	378
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	192	192	0.01	< 0.005	—	192
User Defined Retail	—	—	—	—	—	—	—	—	—	—	—	192	192	0.01	< 0.005	—	193
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	343	343	0.02	< 0.005	—	345
Total	—	—	—	—	—	—	—	—	—	—	—	2,198	2,198	0.14	0.02	—	2,206
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	—	181	181	0.01	< 0.005	—	182
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	62.3	62.3	< 0.005	< 0.005	—	62.5
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	31.7	31.7	< 0.005	< 0.005	—	31.9

User Defined Retail	—	—	—	—	—	—	—	—	—	—	—	31.9	31.9	< 0.005	< 0.005	—	32.0
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	56.9	56.9	< 0.005	< 0.005	—	57.1
Total	—	—	—	—	—	—	—	—	—	—	—	364	364	0.02	< 0.005	—	365

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	0.01	0.11	0.09	< 0.005	0.01	—	0.01	0.01	—	0.01	—	126	126	0.01	< 0.005	—	126
Fast Food Restaurant with Drive Thru	0.01	0.23	0.19	< 0.005	0.02	—	0.02	0.02	—	0.02	—	270	270	0.02	< 0.005	—	270
Fast Food Restaurant w/o Drive Thru	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	137	137	0.01	< 0.005	—	138
User Defined Retail	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
Parking Lot	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
Total	0.02	0.45	0.38	< 0.005	0.03	—	0.03	0.03	—	0.03	—	533	533	0.05	< 0.005	—	534
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	0.01	0.11	0.09	< 0.005	0.01	—	0.01	0.01	—	0.01	—	126	126	0.01	< 0.005	—	126

Fast Food Restaurant with Drive Thru	0.01	0.23	0.19	< 0.005	0.02	—	0.02	0.02	—	0.02	—	270	270	0.02	< 0.005	—	270
Fast Food Restaurant w/o Drive Thru	0.01	0.12	0.10	< 0.005	0.01	—	0.01	0.01	—	0.01	—	137	137	0.01	< 0.005	—	138
User Defined Retail	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
Parking Lot	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
Total	0.02	0.45	0.38	< 0.005	0.03	—	0.03	0.03	—	0.03	—	533	533	0.05	< 0.005	—	534
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	20.8	20.8	< 0.005	< 0.005	—	20.9
Fast Food Restaurant with Drive Thru	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	44.6	44.6	< 0.005	< 0.005	—	44.7
Fast Food Restaurant w/o Drive Thru	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	22.7	22.7	< 0.005	< 0.005	—	22.8
User Defined Retail	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
Parking Lot	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
Total	< 0.005	0.08	0.07	< 0.005	0.01	—	0.01	0.01	—	0.01	—	88.2	88.2	0.01	< 0.005	—	88.4

4.3. Area Emissions by Source

4.3.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.87	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.28	0.01	1.73	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.11	7.11	< 0.005	< 0.005	—	7.32
Total	1.23	0.01	1.73	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.11	7.11	< 0.005	< 0.005	—	7.32
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.87	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.94	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.16	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landscap Equipment	0.03	< 0.005	0.16	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.58	0.58	< 0.005	< 0.005	—	0.60
Total	0.20	< 0.005	0.16	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.58	0.58	< 0.005	< 0.005	—	0.60

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	5.43	28.2	33.6	0.56	0.01	—	51.6
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	4.07	19.2	23.3	0.42	0.01	—	36.8
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	2.33	10.9	13.2	0.24	0.01	—	20.9
User Defined Retail	—	—	—	—	—	—	—	—	—	—	27.3	119	147	2.80	0.07	—	237
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	39.1	178	217	4.02	0.10	—	346
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	5.43	28.2	33.6	0.56	0.01	—	51.6

Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	4.07	19.2	23.3	0.42	0.01	—	36.8
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	2.33	10.9	13.2	0.24	0.01	—	20.9
User Defined Retail	—	—	—	—	—	—	—	—	—	—	27.3	119	147	2.80	0.07	—	237
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	39.1	178	217	4.02	0.10	—	346
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	0.90	4.67	5.57	0.09	< 0.005	—	8.54
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	0.67	3.18	3.86	0.07	< 0.005	—	6.09
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	0.39	1.80	2.19	0.04	< 0.005	—	3.46
User Defined Retail	—	—	—	—	—	—	—	—	—	—	4.51	19.8	24.3	0.46	0.01	—	39.2
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	6.47	29.4	35.9	0.67	0.02	—	57.3

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	69.9	0.00	69.9	6.99	0.00	—	245
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	43.5	0.00	43.5	4.34	0.00	—	152
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	24.8	0.00	24.8	2.48	0.00	—	86.9
User Defined Retail	—	—	—	—	—	—	—	—	—	—	31.0	0.00	31.0	3.10	0.00	—	109
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	169	0.00	169	16.9	0.00	—	592
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	69.9	0.00	69.9	6.99	0.00	—	245
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	43.5	0.00	43.5	4.34	0.00	—	152
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	24.8	0.00	24.8	2.48	0.00	—	86.9

User Defined Retail	—	—	—	—	—	—	—	—	—	—	31.0	0.00	31.0	3.10	0.00	—	109
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	169	0.00	169	16.9	0.00	—	592
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	11.6	0.00	11.6	1.16	0.00	—	40.5
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	7.19	0.00	7.19	0.72	0.00	—	25.2
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	4.11	0.00	4.11	0.41	0.00	—	14.4
User Defined Retail	—	—	—	—	—	—	—	—	—	—	5.14	0.00	5.14	0.51	0.00	—	18.0
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	28.0	0.00	28.0	2.80	0.00	—	98.0

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Supermarket	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4,821	4,821
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11.5	11.5
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.86	5.86
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4,839	4,839
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4,821	4,821
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11.5	11.5
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.86	5.86
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4,839	4,839
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Supermarket	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	798	798
Fast Food Restaurant with Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.90	1.90
Fast Food Restaurant w/o Drive Thru	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.97	0.97

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	801	801

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	9/7/2023	9/21/2023	5.00	10.0	—
Site Preparation	Site Preparation	9/22/2023	9/28/2023	5.00	5.00	—
Grading	Grading	9/24/2023	10/8/2023	5.00	10.0	—
Building Construction	Building Construction	10/9/2023	8/16/2024	5.00	225	—
Paving	Paving	8/17/2024	9/20/2024	5.00	25.0	—
Architectural Coating	Architectural Coating	2/23/2024	8/25/2024	5.00	131	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37

Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	2.80	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	15.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT

Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	13.8	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	6.51	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	2.77	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	59,621	19,874	16,140

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Building Square Footage)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	2,400	—
Site Preparation	0.00	0.00	2.50	0.00	—
Grading	0.00	0.00	7.50	0.00	—
Paving	0.00	0.00	0.00	0.00	6.18

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%
Water Demolished Area	2	36%	36%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Supermarket	0.00	0%
Fast Food Restaurant with Drive Thru	0.00	0%
Fast Food Restaurant w/o Drive Thru	0.00	0%
User Defined Retail	0.00	0%
Parking Lot	6.18	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O

2023	0.00	532	0.03	< 0.005
2024	0.00	532	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Supermarket	1,658	1,658	1,658	605,196	18,538	18,538	18,538	6,766,256
Fast Food Restaurant with Drive Thru	1,634	1,634	1,634	596,414	18,269	18,269	18,269	6,668,072
Fast Food Restaurant w/o Drive Thru	802	802	802	292,730	8,967	8,967	8,967	3,272,803
User Defined Retail	1,026	1,026	1,026	374,490	11,471	11,471	11,471	4,186,903
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	59,621	19,874	16,140

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Supermarket	750,630	532	0.0330	0.0040	392,561
Fast Food Restaurant with Drive Thru	258,091	532	0.0330	0.0040	841,034
Fast Food Restaurant w/o Drive Thru	131,500	532	0.0330	0.0040	428,516
User Defined Retail	132,000	532	0.0330	0.0040	0.00
Parking Lot	235,644	532	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Supermarket	2,835,169	710,979
Fast Food Restaurant with Drive Thru	2,124,736	224,883
Fast Food Restaurant w/o Drive Thru	1,214,135	114,655
User Defined Retail	14,230,620	0.00
Parking Lot	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Supermarket	130	0.00
Fast Food Restaurant with Drive Thru	80.6	0.00
Fast Food Restaurant w/o Drive Thru	46.1	0.00
User Defined Retail	57.6	0.00
Parking Lot	0.00	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Supermarket	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Supermarket	Supermarket refrigeration and condensing units	R-404A	3,922	26.5	16.5	16.5	18.0
Fast Food Restaurant with Drive Thru	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00
Fast Food Restaurant with Drive Thru	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Fast Food Restaurant with Drive Thru	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Fast Food Restaurant w/o Drive Thru	Other commercial A/C and heat pumps	R-410A	2,088	1.80	4.00	4.00	18.0
Fast Food Restaurant w/o Drive Thru	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Fast Food Restaurant w/o Drive Thru	Household refrigerators and/or freezers	R-134a	1,430	0.00	0.60	0.00	1.00

8. User Changes to Default Data

Screen	Justification
Land Use	Configured to match project plans, User Defined Retail represents the Car Wash. Site area = 8.35 acres
Construction: Construction Phases	Project planned to take 12 months to construct. Assumed that architectural coatings would be applied during building construction and paving.
Construction: Dust From Material Movement	Site is expected to be balanced, needing no soil import or export.
Operations: Vehicle Data	Trip rates from traffic study, they include pass-by.
Operations: Energy Use	Assume the car wash electrical use will be similar to the fast food restaurant w/o drive thru
Operations: Water and Waste Water	Assume car wash uses 38 gallons per vehicle, approx. 374,000 cars per year, so 14,230,620 gals/year.
Operations: Solid Waste	Assume car wash waste generation rate is similar to the fast food restaurant w/o drive thru.

ATTACHMENT C

FUEL USAGE WORKSHEET

Fuel Consumption Worksheet

Annual VMT from CalEEMod modeling	Gasoline-Fueled Percentage	Diesel-Fueled Percentage	Average Gasoline mpg	Gasoline Consumption (gallons/yr)	Average Diesel mpg	Diesel Consumption (gallons/yr)
20,894,034	80.3%	19.7%	22.9	732,861	8	513,941

Fleet Mix from CalEEMod modeling

Land Use	ADT	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH	
Commercial	5,120	48.664	4.5873	20.497	15.85	3.5385	0.946978	0.5317	1.9054	0.05047	0.0237	2.659	0.1059	0.6395	100
Vehicle Percentages by fuel type															
Gasoline-powered:		98%	95%	75%	50%	50%	10%	5%	5%	0%	0%	100%	10%	50%	
Diesel-powered:		2%	5%	25%	50%	50%	90%	95%	95%	100%	100%	0%	90%	50%	

truck % = 47.86%