APPENDIX C

Air Quality and Greenhouse Gas Technical Report

Air Quality and Greenhouse Gas Technical Report
La Brea Tar Pits Master Plan

Los Angeles, California

AUGUST 2023

PREPARED FOR

Los Angeles County Museum of Natural History Foundation

LEAD AGENCY

County of Los Angeles

PREPARED BY

SWCA Environmental Consultants

AIR QUALITY AND GREENHOUSE GAS TECHNICAL REPORT LA BREA TAR PITS MASTER PLAN LOS ANGELES, CALIFORNIA

Prepared for

Los Angeles County Museum of Natural History Foundation

On behalf of

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ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	micrograms per cubic meter
AB	Assembly Bill
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
Air Basin	South Coast Air Basin
AQMP	Air Quality Management Plan
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emission Estimator Model
CalEPA	California Environmental Protection Agency
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CAT	California Action Team
CCAA	California Clean Air Act
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	methane
City	City of Los Angeles
City General Plan	City of Los Angeles General Plan
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
County	County of Los Angeles
County General Plan	County of Los Angeles 2035 General Plan
DPM	diesel particulate matter
EO	Executive Order
EPA	U.S. Environmental Protection Agency
Foundation	Los Angeles County Museum of Natural History Foundation
GHG	greenhouse gas
gsf	gross square feet
GWP	global warming potential
H_2S	hydrogen sulfide
HFCs	hydrofluorocarbons
HRA	health risk assessment
HVAC	heating, ventilation, and air conditioning

IPCC	Intergovernmental Panel on Climate Change
IWMA	Integrated Waste Management Act
LACMA	Los Angeles County Museum of Art
LADOT	Los Angeles Department of Transportation
LADWP	Los Angeles Department of Water and Power
LAMC	Los Angeles Municipal Code
LCFS	Low Carbon Fuel Standard
LST	localized significance threshold
Metro	Los Angeles County Metropolitan Transportation Authority
MMT	million metric tons
MT	metric tons
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHTSA	National Highway Traffic Safety Administration
NO_2	nitrogen dioxide
NO_X	oxides of nitrogen
O_3	ozone
OEHHA	California Office of Environmental Health Hazard Assessment
OPR	Governor’s Office of Planning and Research
Page Museum	George C. Page Museum
PFCs	perfluorocarbons
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
ppb	parts per billion
ppm	parts per million
project	La Brea Tar Pits Master Plan
RPS	Renewable Portfolio Standard
RTP	Regional Transportation Plan
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCOTUS	Supreme Court of the United States
SCS	Sustainable Community Strategy
SF_6	sulfur hexafluoride
SO_2	sulfur dioxide
SO_x	sulfur oxides
SRA	source receptor area
TAC	toxic air contaminant

TSCA	Toxic Substances Control Act
VMT	vehicle miles traveled
VOC	volatile organic compound
ZEV	Zero Emission Vehicle

EXECUTIVE SUMMARY

This report analyzes potential air quality and climate change impacts related to the La Brea Tar Pit Master Plan. All analyses have been conducted to comply with South Coast Air Quality Management District (SCAQMD) requirements for air quality and climate change assessments and satisfy the requirements of the California Environmental Quality Act (CEQA). The findings are as follows:

- The project's emissions during construction and operations would not exceed SCAQMD regional mass emissions thresholds.
- The project's emissions during construction and operations would not exceed SCAQMD localized significance thresholds.
- Upon implementation of identified mitigation, the project would not result in significant elevated health risks at sensitive receptors due to proximity to nearby pollution sources.
- The project's carbon monoxide (CO) emissions during long-term project operations would not create any new or exacerbate any existing CO hot spots.
- The project would be consistent with air quality policies set forth by SCAQMD and the Southern California Association of Governments, as presented in the region's most recent Air Quality Management Plan.
- The project would not conflict with the state's goal of reducing greenhouse gas emissions to 40% below 1990 levels by 2030.
- The project would not result in a cumulatively considerable air quality impact.

1 INTRODUCTION

The 13-acre La Brea Tar Pits site is located within the eastern and northeastern portions of Hancock Park in Los Angeles, California. The La Brea Tar Pits, the George C. Page Museum (Page Museum), and associated facilities are owned by the County of Los Angeles (County) but are managed by the non-profit Los Angeles County Museum of Natural History Foundation (Foundation). The Foundation's role is to carry out all County services including public access and programming, administration, and operation of the Natural History Museums of Los Angeles County, including the La Brea Tar Pits and Page Museum. The Foundation proposes a redevelopment, or "reimagining," of the La Brea Tar Pits site, including renovation of the Page Museum, constructing a new museum building, and developing new amenities in surrounding portions of Hancock Park.

The County is the Lead Agency under the California Environmental Quality Act (CEQA); the Museum of Natural History is a County departmental unit. The Foundation retained SWCA Environmental Consultants (SWCA) to prepare this Air Quality and Greenhouse Gas Technical Report in support of the proposed La Brea Tar Pits Master Plan (project).

The purpose of this report is to describe the methodologies used to quantify project air pollutant and greenhouse gas (GHG) emissions and to evaluate the air quality and GHG emissions impacts associated with the construction and operation of the project. This air quality technical report also addresses the consistency of the project with applicable state and local regulatory policies pertaining to air quality and GHG emissions, and analysis of whether the project would cause an exceedance of an ambient air quality standard or South Coast Air Quality Management District (SCAQMD) significance threshold. The report includes a health risk assessment (HRA) to evaluate potential project health impacts on nearby sensitive receptors resulting from project construction and operation. The report also includes a discussion of existing conditions in the project site, global climate change, existing regulations pertaining to air quality and climate change, and an inventory of the GHG emissions that would result from the project.

2 PROJECT LOCATION AND DESCRIPTION

2.1 Project Location

The 13-acre project site is located at 5801 Wilshire Boulevard within the 23-acre Hancock Park (Assessor's Parcel Number 550-801-6902) (Figure 1 and Figure 2). The project site includes 13 acres of the eastern and northwestern portions of Hancock Park and is directly adjacent to the Los Angeles County Museum of Art (LACMA). The project site is located approximately 5.5 miles west of downtown Los Angeles and approximately 8.6 miles east of the Pacific Ocean. It is bounded by 6th Street to the north (an approximately 1,200-foot-long frontage), Curson Avenue to the east (an approximately 830-foot-long frontage), Wilshire Boulevard to the south (an approximately 500-foot-long frontage), and LACMA and the Shin'en Kan Pavilion to the west (an approximately 250-foot-long frontage). The area is known as the Miracle Mile neighborhood of Los Angeles. The project site can be found on the U.S. Geological Survey Hollywood, California, 7.5-minute quadrangle in Section 20, Township 1 South, Range 14 West.

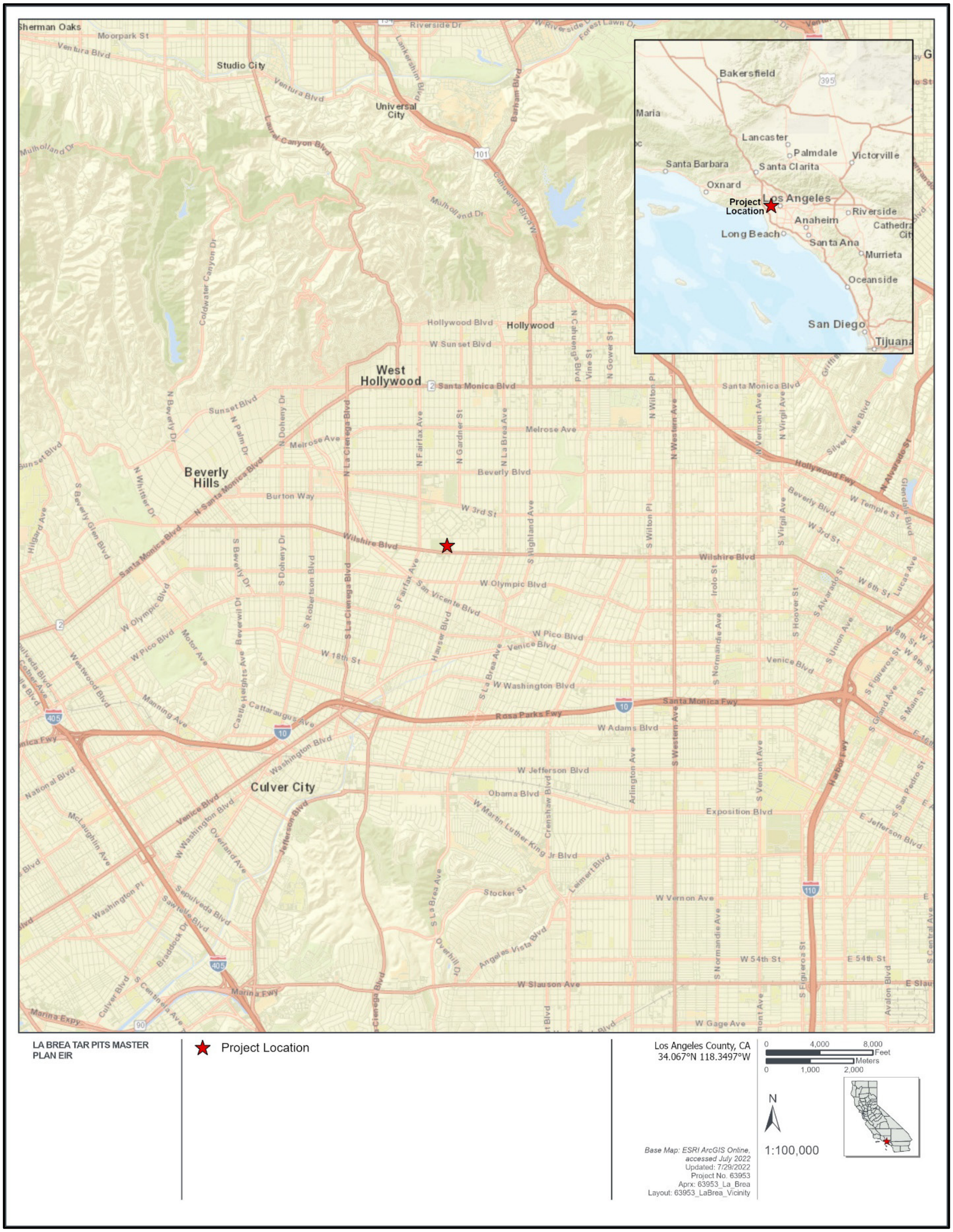

Figure 1. Project vicinity map.

Figure 2. Project location map.

2.2 Existing Conditions and Surrounding Land Uses

The project site includes 13 acres of the eastern and northwestern portions of Hancock Park and broadly encompasses what is known as the La Brea Tar Pits, which includes the Page Museum (see Figure 2). The entirety of Hancock Park is enclosed within an 8- to 10-foot-high metal fence, which serves to secure the site by providing full closure of Hancock Park when the La Brea Tar Pits, Page Museum, and LACMA are closed in the evenings.

The George C. Page Museum is approximately 63,200 square feet and is located on the eastern portion of the project site. The project site contains multiple active fossil quarries, commonly called “tar pits.” The active tar pits (Pits 3, 4, 9, 13, 61, 67, and 91) are located within the northwestern portion of the project site, along with the Observation Pit on the western boundary of the project site. Project 23[1] and Pit 91 are active fossil recovery and excavation sites also located in the northwestern portion of the project site. The Lake Pit is largest paleontological excavation pit on the grounds of Hancock Park, located in the southeastern portion of the project site.

The project site includes an approximately 28,000-square-foot multipurpose grass lawn, known as the Central Green, is located to the west of the Page Museum. Parking for the La Brea Tar Pits is located in the northeast corner of the project site, at the corner of South Curson Avenue and West 6th Street (see Figure 2). Vehicles enter and depart the lot from both directions on South Curson Avenue.

The project site is surrounded by a variety of commercial uses, museums, residential buildings, and schools. The project site is bounded by the Park La Brea Pool and multi-family residential uses to the north across West 6th Street, commercial and residential uses to the east across South Curson Avenue, the Craft Contemporary Museum and other museum and commercial uses south across Wilshire Boulevard, and museum and commercial uses to the west (see Figure 2). The nearest school to the project site is Fusion Academy Miracle Mile, a private learning institution for middle school and high school students, located approximately 0.12 mile away, and the nearest daycare is Michal Daycare located approximately 0.28 mile away.

2.3 Project Description

The La Brea Tar Pits Master Plan is a reimagining of the Page Museum and 13 acres of Hancock Park. The objectives of the project are to provide the following: expanded fossil storage facilities that enable access for scientific research; expanded laboratory research facilities; additional exhibition facilities and learning environments within the park and museum facilities; and better access for future research, excavation, and educational interpretation. Another of the County’s objectives is to support passive recreational use and enhance connections to the surrounding neighborhood.

A summary of the key project components of the La Brea Tar Pits Master Plan is provided in Table 1. The proposed site plan for the project is provided in Figure 3, and discussed in the sections that follow.

[1] During construction on the LACMA parking garage in 2006, 16 new paleontological deposits were discovered, including an almost-complete skeleton of an adult mammoth. Given the size of the discoveries, 23 large wooden boxes were built around the various deposits, allowing many of the discoveries to remain intact. “Project 23” has now become the short-hand descriptor for the location and activities related to the excavation of deposits within the 23 large wooden boxes that is now occurring in a portion of the La Brea site.

Table 1. Project Components Summary

Project Component	Description
Page Museum Renovations	Renovate existing building in same footprint (approximately 63,200 square feet).
New Museum Building	Construct a new two-story, 40,000-square foot museum building northwest of the Page Museum, including two new theaters. The construction of the new museum building would require the removal of vegetation in the footprint of the new building.
Wilshire Gateway	Renovate the existing entrance to the La Brea Tar Pits at Wilshire Boulevard and South Curson Avenue with shaded canopy and new welcome pavilion.
Lake Pit	Construct a pedestrian bridge and walking path over the Lake Pit.
6th Street Gateway	Renovate the existing entrance at the northwest corner of West 6th Street and the entrance to the LACMA service drive with shaded canopy and new welcome pavilion.
Tar Pit Renovations (Pits 3, 4, 9, 13, 61, 67, and 91; Project 23)	Renovate the existing facilities at all the tar pits in the northwestern portion of the project site. These renovations would require the removal and replacement of some vegetation, although the exact amount and nature of the vegetation removal and enhancements has not been determined at the time of this report.
Pedestrian Path and Recreation Areas	Reconfigure the existing pedestrian pathways on-site into a continuous paved pedestrian path linking existing features on the project site. Provide improvements to the Central Green. Establish a children’s play area, picnic areas, and a small dog park west of the 6th Street Gateway.
Circulation and Parking	Expand existing parking lot from 63,000 square feet to 65,000 square feet and relocate it approximately 50 to 70 feet to the north. This would require removal and relocation of existing trees on-site. Increase vehicle parking spaces by approximately five to 15 spaces for a total of 160 to 170 vehicle parking spaces. Add new landscaping and vehicle access lanes to the parking lot. Establish new school drop-off/loading area approximately 215 to 230 feet long on South Curson Avenue adjacent to the Wilshire Gateway picnic area.
Landscaping	Provide a newly renovated park space to include retention and renovation of existing lawn areas and planting of new shrubs and trees, including California native trees, shrubs, and forbs. Establish three distinct landscaping zones encircled by a looping pedestrian path. Create biofiltration areas for stormwater management. Enhancement and rehabilitation of the existing landscaping of the 13-acre portion of Hancock Park would require the removal of some of the existing landscaping and vegetation. The exact location of vegetation removal and rehabilitation has not been determined at the time of this report.

Figure 3. Proposed site plan.

2.3.1 Page Museum Renovations

The Master Plan proposes renovations to the existing Page Museum within the same footprint as the existing building (currently approximately 63,200 square feet) to allow for enlarged exhibition space, additional storage, a ground floor café, and retail space. The central atrium would be renovated to provide additional exhibits and provide additional classroom and laboratory space. The second floor of the Page Museum would contain two classrooms and a multipurpose space. An outdoor café would be located next to these spaces on the center terrace on the west side of the Page Museum. The project would add several sustainability features to the Page Museum. The features include enhanced daylighting, rainwater collection leading to bioswales, a sloped green roof, and incorporation of rooftop solar photovoltaic panels onto the buildings, where possible.[2]

In addition, the project would demolish the existing maintenance building and service facilities along the northern boundary, directly west of the parking lot. A new 2,000-gross-square-foot satellite maintenance and support building would be constructed for additional storage, administration, and research space directly west of the parking lot. Construction of the maintenance and support building is expected to require removal of existing vegetation in the building footprint.

2.3.2 New Museum Building

A new two-story museum building would be located to the northwest of the Page Museum. The building would be approximately 40,000 square feet and would increase the total museum square footage to 104,000 gsf. The new museum building would include an extended central lobby, exhibit spaces, two theaters, a mechanical equipment room, research and collections rooms, administration spaces, and a loading dock. The new museum building would require the removal of vegetation where the new building footprint is proposed.

The Page Museum and new museum building would be continuously connected on the first floor. The first-floor central lobby would face southwest toward the Central Green and branch off into the Page Museum to the east and the new museum building to the west. An updated retail and café space would be located off the lobby and look out over the Central Green. The Page Museum and the new museum buildings would be disconnected on the second floor, which would rise above the earthen berm. The separated facilities would be accessible through sloped outdoor walkways from the Central Green or interior staircases in the museum. There would be pedestrian entrances leading into the central lobby from the Central Green and from the parking lot. The existing Page Museum entrance would be converted to an educational group and tour entrance, which would be connected to a new school drop-off area on South Curson Avenue.

2.3.3 Tar Pit Renovations

The project would renovate the existing facilities at all the tar pits in the northeastern portion of the project site. The extended chain fencing around Pits 3, 4, 9, 13, 61, and 67 would be removed. The project would construct clearly defined viewing areas around each of the tar pits. The project would relocate the wooden fossil boxes, research facilities, and ongoing excavation associated with Project 23 to space within and adjacent to the new museum building. The temporary storage and research buildings adjacent to Project 23 would be demolished or repurposed within the project site.

[2] At this stage of the design process, it is undetermined whether it will be feasible to incorporate solar panels on both the new museum building and the existing Page Museum. To the extent it is practicable within other limitations (e.g., existing structural and historic considerations), solar panels would be incorporated.

Pit 91 would continue to be a key research and interpretation destination in the park. The project would demolish the current viewing station overlooking Pit 91 and construct a shaded outdoor classroom with canopy. While excavation at Pit 91 could be completed in a few years, the site would be maintained and enhanced to support future excavation and education opportunities. In addition, the new support facilities at Pit 91 would continue to support temporary excavation sites at adjacent Pit 10 or other future field sites.

2.3.4 Site Entryways and Other Internal Improvements

The project would renovate the existing entrance to the La Brea Tar Pits located at Wilshire Boulevard and South Curson Avenue. A large, shaded canopy would stretch down Wilshire Boulevard and curve around to South Curson Avenue to create a new welcome pavilion and shaded entry plaza; this would provide orientation, spaces for gathering and queuing, and restrooms. A picnic area would also be located under the shaded canopy. A school drop-off area on South Curson Avenue would lead directly to the education museum entrance, enabling the choreography of student tour itineraries that are distinct from general museum visitors and other tour groups.

A pedestrian bridge and walking path would be constructed over the Lake Pit. Directly to the east of the Lake Pit, a new garden bioswale would be installed to manage stormwater and would include vegetation related to the relocated mammoths and mastodon sculptures.

The project would renovate the existing entrance at the northwest corner of West 6th Street and the entrance to the LACMA parking garage. Similar to the Wilshire Gateway, a shaded canopy and welcome pavilion would provide orientation, legibility, and amenities. Additional landscape and recreational amenities would be provided and include play areas, picnic areas, and interpretation zones.

2.3.5 Landscaping

The conceptual landscape plan included in the Master Plan envisions the newly renovated park space to include retention of existing lawn areas, shrubs, and trees, supplemented with additional plantings of California native trees, shrubs, and forbs. The Master Plan depicts a preliminary estimate of the existing trees at the site and identifies new and relocated trees. The Master Plan states the intention to preserve existing trees as feasible while incorporating a significant degree of new planting and reducing non-native species such as Mexican fan palms, agaves, and yuccas. The planting strategy includes the introduction or relocation of trees, with the relocated trees moved from existing locations within the project site. Trees that would be removed include non-native species and/or specimens that are diseased and/or not in good health. Trees that conflict with the proposed new construction would be relocated or removed (e.g., trees within the proposed footprint of the shifted parking lot on the northern side of the project site). New plantings would be selected for resilience to disease and with consideration for their ability to create shaded areas at the park.

2.3.6 Project Ground Disturbance

At the time of preparation of this report, final engineering, design, and grading plans for the project had not been finalized. Because the project design is at a preliminary stage, the level of detail needed to determine the precise depth and extent of ground disturbance is not known. However, the level of design that has occurred to-date allows for a general characterization of the overall ground disturbance and excavation that would be necessary for the project. The project design team worked with the Foundation and the County to characterize a “worst-case” ground-disturbance estimate, which represents the most-impactful scenario in terms of depths and amount of excavation that includes all project elements. While separate estimates for each project element (e.g., the new museum building) are not yet available, the estimate based on the worst-cast scenario provides a reasonable basis on which the potential for impacts to archaeological and tribal cultural resources can be analyzed.

Under the most-impactful scenario, the project would at maximum require excavations 6 to 10 feet below ground, potentially involving 53,000 cubic yards of cut/export and 37,000 cubic yards of imported fill. In general, the new museum building would require the most ground disturbance and excavation. Although the final elevation of the foundation for the new museum building is not known at this time, it may be below the existing ground surface to provide a smooth connection to the existing Page Museum. The expansion of the new parking lot to the north and west of the existing lot would likely also require grading and imported sediments to create a level surface as a base beneath the new surface. Pile-drilling could be required to construct the structural supports for the new walkway over the Lake Pit and possibly the two gateway entrances, and ground disturbances are expected to be approximately consistent with the maximum depths of 10 feet considered for the project but contained with the relatively narrow diameter of the bore and in a limited number of locations. The pedestrian paths, recreation areas, pit renovations, and landscaping would all require shallow to moderate excavation not to exceed approximately 5 feet; deeper excavation could possibly be required for tree planting/removal, although many of the ground-disturbances for these components would be at more shallow depths (e.g., 18 inches), for example to complete smaller plantings and construct/remove pathways. While these project elements are expected to require less excavation than for the new museum, this report assumes that excavations could occur up to 10 feet deep throughout the 13-acre project site to allow maximum flexibility as the project designs become more refined.

In addition, the project would demolish the existing maintenance building and service facilities along the northern boundary, directly west of the parking lot. A new 2,000-square foot satellite maintenance and support building would be constructed for additional storage, administration, and research space directly west of the parking lot.

2.4 Construction Time Frame and Phasing

Construction of the project, from mobilization to the site to final completion, is expected to occur between 2024 and 2028, and would last for approximately 4 years. The project would be constructed in five phases: 1) demolition and site preparation of the project site; 2) installation of infrastructure improvements; 3) development of the proposed new museum building and parking lot; 4) landscaping and hydroseeding; and 5) on-site roadway improvements. All construction activities, including construction staging of equipment, would be situated entirely within the project site. Typical construction equipment would be used during all phases of project construction and would be stored within the staging area, potentially including excavators, dozers, backhoes, dump trucks, water trucks, jackhammers, sand blasters, rollers, pavers, generators, scrapers, forklifts, delivery trucks, paving equipment, cranes, and air compressors. It is assumed that blasting would not be required for project demolition or construction.

3 ENVIRONMENTAL SETTING

The project is located within the South Coast Air Basin (Air Basin), an approximately 6,745-square-mile area bounded by the Pacific Ocean to the west; the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east; and San Diego County to the south. The South Coast Air Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the Coachella Valley area in Riverside County. The regional climate within the Air Basin is considered semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime onshore breezes, and moderate humidity. The air quality within the

Air Basin is primarily influences by meteorology and a wide range of emissions sources, such as dense population centers, heavy vehicular traffic, and industry.

Air pollutant emissions within the Air Basin are generated primarily by stationary and mobile sources. Stationary sources can be divided into two major subcategories: point and area sources. Point sources occur at a specific location and are often identified by an exhaust vent or stack, such as combustion equipment that produces electricity or generates heat. Area sources are widely distributed and include residential and commercial water heaters, agricultural fields, landfills, and others. Mobile sources include emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources may be legally operated on roadways and highways. Off-road sources include aircraft, ships, trains, and self-propelled construction equipment. Air pollutants can also be generated by the natural environment, such as when high winds suspend fine dust particles.

3.1 Overview of Air Pollution and Potential Health Effects

3.1.1 Criteria Air Pollutants

Both the federal and state governments have established ambient air quality standards for outdoor concentrations of specific pollutants in order to protect the public health and welfare. These pollutants are referred to as "criteria air pollutants" and the national and state standards have been set at levels considered safe to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly with a margin of safety; and to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

Certain air pollutants have been recognized to cause notable health problems and consequential damage to the environment, either directly or in reaction with other pollutants due to their presence in elevated concentrations in the atmosphere. Such pollutants have been identified and regulated as part of the overall endeavor to prevent further deterioration and facilitate improvement in the air quality with the Air Basin. The criteria air pollutants for which national and state standards have been promulgated and which are most relevant to current air quality planning and regulation in the Air Basin include carbon monoxide (CO), ozone (O_3), particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead, sulfates, and hydrogen sulfide (H_2S). These pollutants, as well as volatile organic compounds (VOCs) and toxic air contaminants (TACs), are discussed in the following paragraphs. The national and state criteria pollutants and the applicable ambient air quality standards are listed in Table 2.

3.1.1.1 OZONE

O_3 is a strong-smelling, pale blue, reactive, toxic chemical gas consisting of three oxygen atoms. It is a secondary pollutant formed in the atmosphere by a photochemical process involving the sun's energy and O_3 precursors. These precursors are mainly oxides of nitrogen (NO_x) and VOCs. The maximum effects of precursor emissions on O_3 concentrations usually occur several hours after they are emitted and many miles from the source. Meteorology and terrain play major roles in O_3 formation, and ideal conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. O_3 exists in the upper atmosphere O_3 layer (stratospheric ozone) and at the Earth's surface in the troposphere (ozone). The O_3 that the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) regulate as a criteria air pollutant is produced close to the ground level, where people live, exercise, and breathe. Ground-level O_3 is a harmful air pollutant that causes numerous adverse health effects and is thus considered "bad" O_3. Stratospheric, or "good" O_3 occurs naturally in the upper atmosphere, where it reduces the amount of ultraviolet light (i.e., solar radiation) entering the Earth's atmosphere. Without the protection of the beneficial stratospheric O_3 layer, plant and animal life would be seriously harmed.

O_3 in the troposphere causes numerous adverse health effects; short-term exposures (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes (EPA 2022a). These health problems are particularly acute in sensitive receptors such as the sick, the elderly, and young children.

3.1.1.2 NITROGEN DIOXIDE

NO_2 is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide (NO), which is a colorless, odorless gas. NO_x plays a major role, together with VOCs, in the atmospheric reactions that produce O_3. NO_x is formed from fuel combustion under high temperature or pressure. In addition, NO_x is an important precursor to acid rain and may affect both terrestrial and aquatic ecosystems. The two major emissions sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.

NO_2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections (EPA 2022a).

3.1.1.3 CARBON MONOXIDE

CO is a colorless, odorless gas formed by the incomplete combustion of hydrocarbon, or fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, such as the project location, automobile exhaust accounts for the majority of CO emissions. CO is a nonreactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions—primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, which is a typical situation at dusk in urban areas from November to February. The highest levels of CO typically occur during the colder months of the year, when inversion conditions are more frequent.

In terms of adverse health effects, CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions (EPA 2022a).

3.1.1.4 SULFUR DIOXIDE

SO_2 is a colorless, pungent gas formed primarily from incomplete combustion of sulfur-containing fossil fuels. The main sources of SO_2 are coal and oil used in power plants and industries; as such, the highest levels of SO_2 are generally found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels.

SO_2 is an irritant gas that attacks the throat and lungs and can cause acute respiratory symptoms and diminished ventilator function in children. When combined with particulate matter, SO_2 can injure lung tissue and reduce visibility and the level of sunlight. SO_2 can also yellow plant leaves and erode iron and steel (EPA 2022a).

3.1.1.5 PARTICULATE MATTER

Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Coarse particulate matter (PM_{10}) is 10 microns or less in diameter and is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Fine particulate matter ($PM_{2.5}$) is 2.5 microns or less in diameter and is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides (SOx), NO_x, and VOCs.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly or be absorbed into the bloodstream, causing damage elsewhere in the body. Additionally, these substances can transport adsorbed gases such as chlorides or ammonium into the lungs, also causing injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissue. Suspended particulates also damage and discolor surfaces on which they settle and produce haze and reduce regional visibility.

People with influenza, people with chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death as a result of breathing particulate matter. People with bronchitis can expect aggravated symptoms from breathing in particulate matter. Children may experience a decline in lung function due to breathing in $PM_{2.5}$ and PM_{10} (EPA 2022a).

3.1.1.6 LEAD

Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturing of batteries, paints, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phaseout of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phaseout of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead-emissions sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient (IQ) performance, psychomotor performance, reaction time, and growth. Children are highly susceptible to the effects of lead (EPA 2022a).

3.1.1.7 OTHERS

Sulfates. Sulfates are the fully oxidized form of sulfur, which typically occur in combination with metals or hydrogen ions. Sulfates are produced from reactions of SO_2 in the atmosphere. Sulfates can result in respiratory impairment, as well as reduced visibility.

Vinyl Chloride. Vinyl chloride is a colorless gas with a mild, sweet odor, which has been detected near landfills, sewage plants, and hazardous waste sites, due to the microbial breakdown of chlorinated solvents. Short-term exposure to high levels of vinyl chloride in air can cause nervous system effects, such as dizziness, drowsiness, and headaches. Long-term exposure through inhalation can cause liver damage, including liver cancer.

Hydrogen Sulfide. H_2S is a colorless and flammable gas that has a characteristic odor of rotten eggs. Sources of H_2S include geothermal power plants, petroleum refineries, sewers, and sewage treatment plants. Exposure to H_2S can result in nuisance odors, as well as headaches and breathing difficulties at higher concentrations.

3.1.2 Volatile Organic Compounds

VOCs are typically formed from combustion of fuels and/or released through evaporation of organic liquids. Some VOCs are also classified by the State as TACs. While there are no specific VOC ambient air quality standards, VOC is a prime component (along with NO_x) of the photochemical processes by which such criteria pollutants as O_3, NO_2, and certain fine particles are formed. They are, thus, regulated as "precursors" to the formation of those criteria pollutants.

3.1.3 Toxic Air Contaminants

TACs refer to a diverse group of "non-criteria" air pollutants that can affect human health but have not have ambient air quality standards established for them. This is not because they are fundamentally different from the pollutants discussed above, but because their effects tend to be local rather than regional. TACs are identified by federal and state agencies based on a review of available scientific evidence. In the state of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics "Hot Spots" Information and Assessment Act, Assembly Bill (AB) 2588, was enacted by the legislature in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hot spots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years.

The federal TACs are air pollutants that may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health, although there are no ambient standards established for TACs. Many pollutants are identified as TACs because of their potential to increase the risk of developing cancer or other acute (short-term) or chronic (long-term) health problems. For TACs that are known or suspected carcinogens, the CARB has consistently found that there are no levels or thresholds below which exposure is risk free. Individual TACs vary greatly in the risks they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another. For certain TACs, a unit risk factor can be developed to evaluate cancer risk. For acute and chronic health effects, a similar factor, called a Hazard Index, is used to evaluate risk. TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA). Examples of TAC sources include industrial processes, dry cleaners, gasoline stations, paint and solvent operations, and fossil fuel combustion sources. The TACs that are relevant to the implementation of the project include diesel particulate matter (DPM) and airborne asbestos.

DPM was identified as a TAC by the CARB in August 1998 (CARB 1998). DPM is emitted from both mobile and stationary sources. In California, on-road diesel-fueled vehicles contribute approximately 40% of the statewide total, with an additional 57% attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources, contributing about 3% of emissions, include shipyards, warehouses, heavy-equipment repair yards, and oil and gas production operations. Emissions from these sources are from diesel-fueled internal combustion engines. Stationary sources that report DPM emissions also include heavy construction, manufacturers of asphalt paving materials and blocks, and diesel-fueled electrical generation facilities.

Exposure to DPM can have immediate health effects. DPM can have a range of health effects including irritation of eyes, throat, and lungs, causing headaches, lightheadedness, and nausea. Exposure to DPM also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks. Children, the elderly, and people with emphysema, asthma, and chronic heart and lung disease are especially sensitive to fine-particle pollution. In California, DPM has been identified as a carcinogen.

Naturally occurring asbestos areas are identified based on the type of rock found in the area. Asbestos-containing rocks found in California are ultramafic rocks, including serpentine rocks. Asbestos has been designated a TAC by the CARB and is a known carcinogen. When this material is disturbed in connection with construction, grading, quarrying, or surface mining operations, asbestos-containing dust can be generated. Exposure to asbestos can result in adverse health effects such as lung cancer, mesothelioma (cancer of the linings of the lungs and abdomen), and asbestosis (scarring of lung tissues that results in constricted breathing) (Van Gosen and Clinkenbeard 2011). According to the California Geologic Survey, the project site is not located in an area of naturally occurring asbestos (CARB 2000a).

Asbestos-containing materials become a health hazard once they are disturbed. Intact, asbestos fibers imbedded within construction materials and components are inert and do not pose a health hazard; however, once they are disturbed, through physical contact or building renovation and demolition activities, asbestos fibers may be rendered airborne (SCAQMD 2007).

3.1.4 Odors

Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. In a phenomenon known as odor fatigue, a person can become desensitized to almost any odor, and recognition may only occur with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

A unique feature of the project is the existing subsurface conditions which consist of a relatively thin layer of artificial fill overlying alluvial deposits. The alluvial deposits consist of stiff clay and dense tar-bearing sands. Tar-bearing sands are saturated with hydrocarbons, whereas the upper clay soils contain less hydrocarbons. The presence of the hydrocarbons in the sediments is the result of the project site being over an oil field. Hydrogen sulfide and methane gases generated within the oil field are present in the subsurface. Because the project site is located within an area of known shallow methane and H_2S gas accumulation, crude oil and methane gas leak out from the petroleum deposits and migrate through fractures and faults located within the bedrock until encountering the alluvial soils, where they permeate into the alluvium and continue to travel upward to the ground surface. These unique subsurface conditions are a potential source of odors due to the presence of H_2S. Many of the light petroleum components are lost to evaporation and biogenic processes, resulting in viscous tar seeping out of the ground surface (Deane et al. 2018). A methane specialist will be developing the ventilation system and barriers to reduce gas seepage into enclosed structures.

Table 2. State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards	
			Primary	Secondary
Ozone (O_3)	1 hour	0.09 ppm (180 µg/m³)	--	Same as Primary
	8 hour	0.070 ppm (137 µg/m³)	0.070 ppm (137µg/m³)	
Respirable particulate matter (PM_{10})	24 hour	50 µg/m³	150 µg/m³	Same as Primary
	Annual mean	20 µg/m³	--	
Fine particulate matter ($PM_{2.5}$)	24 hour	--	35 µg/m³	Same as Primary
	Annual mean	12 µg/m³	12.0 µg/m³	15 µg/m³
Carbon monoxide (CO)	1 hour	20 ppm (23 µg/m³)	35 ppm (40 mg/m³)	--
	8 hour	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	--
Nitrogen dioxide (NO_2)	1 hour	0.18 ppm (339 µg/m³)	100 ppb (188 µg/m³)	--
	Annual mean	0.030 ppm (57 µg/m³)	0.053 ppm (100 µg/m³)	Same as Primary
Sulfur dioxide (SO_2)	1 hour	0.25 ppm (655 µg/m³)	75 ppb (196 µg/m³)	--
	3 hour	--	--	0.5 ppm (1300 µg/m³)
	24 hour	0.04 ppm (105 µg/m³)	0.14 ppm	--
	Annual mean	--	0.030 ppm	--
Lead	30-day average	1.5 µg/m³	--	--
	Calendarquarter	--	1.5 µg/m³	Same as Primary
	Rolling 3-month average	--	0.15 µg/m³	Same as Primary
Visibility reducing particles	8 hour	10-mile visibility standard, extinction of 0.23 per kilometer	No National Standards	
Sulfates	24 hour	25 µg/m³		
Hydrogen sulfide (H_2S)	1 hour	0.03 ppm (42 µg/m³)		
Vinyl chloride	24 hour	0.01 ppm (265 µg/m³)		

Source: CARB (2016)

Notes: ppm = parts per million; ppb = parts per billion; µg/m³ = micrograms per cubic meter; -- = no standard.

3.2 Existing Air Quality Conditions in the Project Area

3.2.1 Regional Air Quality

The Southern California region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. The usually mild climatology pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The regional climate within the Air Basin is considered semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime onshore breezes, and moderate humidity.

The extent and severity of air pollution in the Air Basin is a function of the area's natural physical characteristics (e.g., weather and topography), as well as human-made influences (e.g., land use development patterns, heavy vehicular traffic, and industry). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography affect the accumulation and dispersion of pollutants throughout the Air Basin, making it an area of high pollution potential.

Pollutant concentrations in the Air Basin vary with location, season, and time of day. O_3 concentrations, for example, tend to be lower along the coast, higher in the near inland valleys, and lower in the far inland areas of the Air Bain and adjacent desert. The most severe air pollution throughout the Air Basin occurs from June through September. This condition is generally attributed to the large amount of pollutant emissions, light winds, and shallow vertical atmospheric mixing. This frequently reduces pollutant dispersion, causing elevated air pollution levels. Over the past 30 years, substantial progress has been made in reducing air pollution levels in Southern California (CARB 2018a). However, the Air Basin still fails to meet the national standards for O_3 and $PM_{2.5}$. In addition, Los Angeles County still fails to meet the national standard for lead. On May 24, 2012, the CARB approved the State Implementation Plan revision for the federal lead standard, which the EPA revised in 2008. The State Implementation Plan revision addresses attainment of the federal lead standard in the South Coast Air Basin portion of Los Angeles County, the only area in California designated as nonattainment for lead. Lead concentrations in this nonattainment area have been below the level of the federal standard since December 2011. SCAQMD has the responsibility for ensuring that all national and state air quality standards are achieved and maintained throughout the Air Basin. To meet the standards, SCAQMD has adopted a series of Air Quality Management Plans (AQMPs), discussed below under regulatory setting.

3.2.2 Regional Attainment Status

Depending on whether the applicable ambient air quality standards are met or exceeded, the Air Basin is classified on a federal and state level as being in "attainment" or "nonattainment." The EPA and CARB determine the air quality attainment status of designated areas by comparing ambient air quality measurements from state and local ambient air monitoring stations with the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS). These designations are determined on a pollutant-by-pollutant basis. Consistent with federal requirements, an unclassifiable/unclassified designation is treated as an attainment designation. The Air Basin currently fails to meet the NAAQS for lead, O_3, and $PM_{2.5}$. Therefore, Los Angeles County South Coast Air Basin is considered a "non-attainment" area for these pollutants on the federal level. As of September 2022, the Air Basin is also considered in non-attainment for O_3, $PM_{2.5}$, and PM_{10} on the state level (EPA 2022b).

3.2.3 Regional Multiple Air Toxics Exposure Study

The SCAQMD has released an Air Basin-wide air toxics study, the Multiple Air Toxics Exposure Study V (MATES V). The MATES V study was developed to evaluate the cancer risk from toxic air emissions throughout the Air Basin by conducting a comprehensive monitoring program, an updated emissions inventory of TACs, and a modeling effort to fully characterize health risks for those living in the Air Basin. In the past iterations of the MATES study, the air toxics cancer risks were evaluated based on inhalation exposures only. However, in MATES V, the methodology was updated to include multiple exposure pathways, such as oral and dermal. The MATES V study concluded that the average carcinogenic risk from air pollution in the Air Basin is approximately 424 in 1 million over a 70-year duration (SCAQMD 2021a). Mobile sources (e.g., cars, trucks, trains, ships, aircraft, etc.) represent the greatest contributors. Approximately 50% of the risk is attributed to diesel particulate emissions, approximately 25% to other toxic emissions associated with mobile sources (including benzene, butadiene, and carbonyls), and approximately 25% of all carcinogenic risk is attributed to stationary sources, which include large industrial operations, such as refineries and metal processing facilities, as well as smaller businesses, such as gas stations and chrome plating.

As part of the MATES V study, the SCAQMD prepared a series of maps that shows regional trends in estimated outdoor inhalation cancer risk from toxic emissions, as part of the ongoing effort to provide insight into relative risks. The maps' estimates represent the number of potential cancers per million people associated with a lifetime of breathing air toxics (24 hours per day outdoors for 70 years) in parts of the area. The MATES V map is the most recently available map to represent existing conditions near the project site. The estimated cancer risk for the vast majority of the urbanized area within the Air Basin ranges from 200 to 1,000 cancers per million over a 70-year duration. Generally, the risk from air toxics is lower near the coastline, with higher risks concentrated near large diesel sources (e.g., freeways, airports, and ports).

3.2.4 Local Air Quality

Air pollutants emissions are generated in the local vicinity by stationary and area-wide sources, such as commercial and industrial activity, space and water heating, landscape maintenance, consumer products, and mobile sources primarily consisting of automobile traffic. Motor vehicles are the primary source of pollutants in the local vicinity.

3.2.4.1 EXISTING CRITERIA POLLUTANT LEVELS AT NEARBY MONITORING STATIONS

The SCAQMD maintains a network of air quality monitoring stations located throughout the Air Basin and has divided the Air Basin into 38 source receptor areas (SRAs) in which 31 monitoring stations operate. The project site is located within SRA 1, which covers the Central Los Angeles area.
The monitoring station most representative of the project site is the North Main Street Station, located at 1630 North Main Street in the city of Los Angeles, approximately 7.3 miles east of the project site. Criteria pollutants monitored at this station include PM_{10}, $PM_{2.5}$, O_3, CO, NO_2, lead, and sulfate. Table 3 presents the ambient pollutant concentrations that have been measured in SRA 1 for the period 2018–2020, as well as any exceedances of the NAAQS and CAAQS. The GHG inventory for California for years 2015–2019 is presented in Table 4. The national and state criteria pollutants and the applicable ambient air quality standards are listed above in Table 2.

Table 3. Summary of Ambient Air Quality in the Central Los Angeles Area

Pollutant		Year		
		2018	2019	2020
O3	Maximum 1-hour concentration (ppm)	0.098	0.085	0.185
	Days exceeding CAAQS (0.09 ppm)	2	0	14
	Maximum 8-hour concentration (ppm)	0.073	0.08	0.118
	Days exceeding NAAQS (0.07 ppm)	4	2	22
	Days exceeding CAAQS (0.07 ppm)	4	2	22
Respirable PM_{10}	Maximum 24-hour concentration (μg/m^3)	81	62	77
	Days exceeding NAAQS (150 μg/m^3)	0	0	0
	Days exceeding CAAQS (50 μg/m^3)	31	3	24
	Annual arithmetic mean (μg/m^3)	34.1	25.5	23
	Does measured AAM exceed CAAQS (20 μg/m^3)?	Yes	Yes	Yes

Pollutant		Year		
		2018	2019	2020
Fine $PM_{2.5}$	Maximum 24-hour concentration ($\mu g/m^3$)	43.8	43.5	47.3
	Days exceeding NAAQS (35 $\mu g/m^3$)	3	1	2
	Annual arithmetic mean ($\mu g/m^3$)	12.58	10.85	12.31
	Does measured AAM exceed NAAQS/CAAQS (12 $\mu g/m^3$)?	Yes	No	Yes
CO	Maximum 1-hour concentration (ppm)	2.0	2.0	1.9
	Days exceeding NAAQS (35.0 ppm)	0	0	0
	Days exceeding CAAQS (20.0 ppm)	0	0	0
	Maximum 8-hour concentration (ppm)	1.7	1.6	1.5
	Days exceeding NAAQS and CAAQS (9 ppm)	0	0	0
NO2	Maximum 1-hour concentration (ppm)	0.0701	0.0697	0.0618
	Days exceeding CAAQS (0.18 ppm)	No	No	No
	Annual arithmetic mean (ppm)	0.0185	0.0177	0.0169
	Does measured AAM exceed NAAQS (0.0534 ppm)?	No	No	No
	Does measured AAM exceed CAAQS (0.03 ppm)?	No	No	No
Sulfur dioxide (SO_2)	Maximum 1-hour concentration (ppm)	0.0179	0.01	0.0038
	Days exceeding CAAQS (0.25 ppm)	0	0	0
	Maximum 24-hour concentration (ppm)	0.003	0.003	0.003
	Days exceeding CAAQS (0.04 ppm)	0	0	0
	Days exceeding NAAQS (0.14 ppm)	0	0	0
	Annual arithmetic mean (ppm)	0.001	0.001	0.001
	Does measured AAM exceed NAAQS (0.030 ppm)?	No	No	No
Lead	Maximum 30-day average concentration ($\mu g/m^3$)	0.011	0.012	0.013
	Does measured concentration exceed NAAQS (1.5 $\mu g/m^3$)?	No	No	No
	Maximum calendar quarter concentration ($\mu g/m^3$)	0.011	0.01	0.011
	Does measured concentration exceed CAAQS (1.5 $\mu g/m^3$)?	No	No	No
Sulfates	Maximum 24-hour concentration ($\mu g/m^3$)	4.5	5.1	3.3
	Does measured concentration exceed CAAQS (25 $\mu g/m^3$)?	No	No	No

Source: SCAQMD (2022b)

Notes: AAM = annual arithmetic mean; ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter

Table 4. California Greenhouse Gas Inventory

Parameter	Unit*	Year				
		2015	2016	2017	2018	2019
Transportation	MMT CO_2e	166.2	169.8	171.2	169.6	166.1
	Percentage	38.5%	40.4%	41.2%	40.7%	40.6%
Electric power	MMT CO_2e	84.8	68.6	62.1	63.1	58.8
	Percentage	19.6%	16.3%	14.9%	15.2%	14.4%
Industrial	MMT CO_2e	90.3	89	88.8	89.2	88.2
	Percentage	20.9%	21.2%	21.4%	21.4%	21.5%

Parameter	Unit*	Year				
		2015	2016	2017	2018	2019
Commercial and residential	MMT CO_2e	38.8	40.6	41.3	41.4	43.8
	Percentage	9.0%	9.7%	9.9%	9.9%	10.7%
Agriculture	MMT CO_2e	33.5	33.3	32.5	32.7	31.8
	Percentage	7.8%	7.9%	7.8%	7.9%	7.8%
High global warming potential (GWP)	MMT CO_2e	18.6	19.2	20	20.4	20.6
	Percentage	4.3%	4.6%	4.8%	4.9%	5.0%
Total Net Emissions	MMT CO_2e	**432.2**	**420.5**	**415.9**	**416.4**	**409.3**

Source: California GHG Inventory for 2000–2019 (CARB 2021)
* MMT CO2e = million metric tons carbon dioxide equivalent

3.2.4.2 EXISTING HEALTH RISK IN THE PROJECT VICINITY

Based on the MATES V model, the multi-pathway cancer risk in the area immediately surrounding the project site in the 90036 zip code is approximately 495 in 1 million (SCAQMD 2021b). The cancer risk in this area includes diesel particulate matter, benzene, formaldehyde, and arsenic. However, the cancer risk is predominantly related to nearby sources of diesel particulate (e.g., the Harbor Freeway [I-110]).
In general, the risk at the project site is comparable with other urbanized areas in Los Angeles as air toxics cancer risk in this zip code is higher than 63.0% of the South Coast AQMD population (OEHHA 2021).

OEHHA, on behalf of the California EPA (CalEPA), provides a screening tool called CalEnviroScreen that can be used to help identify California communities disproportionately burdened by multiple sources of pollution. According to CalEnviroScreen, the project is located in the 47th percentile, which means the project site is about average in comparison to other communities within California.

3.2.4.3 SURROUNDING USES

The project site is in a highly urbanized area. As discussed in the project description, the area surrounding the La Brea Tar Pits includes a mix of commercial uses, residential uses, and open spaces. Specifically, the project is bounded by LACMA, Park La Brea Pool, parking lots, commercial and multi-family uses.

3.2.4.4 SENSITIVE USES

Some population groups, including children, elderly, and acutely and chronically ill persons (especially those with cardiorespiratory diseases), are considered more sensitive to air pollution than others.
A sensitive receptor is a person in the population who is particularly susceptible to health effects due to exposure to an air contaminant. The following are land uses where sensitive receptors are typically located:

- schools, playgrounds and childcare centers
- long-term health care facilities
- rehabilitation centers
- convalescent centers
- hospitals
- retirement homes

- residences

The closest sensitive land uses to the project site are residential uses located 87 feet to the east and north of the project. All other air quality sensitive receptors are located at greater distances from the project and would be less impacted by project emissions. Therefore, project impacts are quantified only for these nearest sensitive receptors.

3.3 Greenhouse Gas Setting

Global climate change refers to the changes in average climatic conditions on Earth as a whole, including changes in temperature, wind patterns, precipitation, and storms. Global warming, a related concept, is the observed increase in the average temperature of the Earth's atmosphere and oceans in recent decades. There is a general scientific consensus that global climate change is occurring, caused in whole or in part by increased emissions of GHGs that keep the Earth's surface warm by trapping heat in the Earth's atmosphere, in much the same way as glass traps heat in a greenhouse. The Earth's climate is changing because human activities, primarily the combustion of fossil fuels, are altering the chemical composition of the atmosphere through the buildup of GHGs. GHGs are released by the combustion of fossil fuels, land clearing, agriculture, and other activities, and lead to an increase in the greenhouse effect. While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy.

Regarding the adverse effects of global warming, as reported by the Southern California Association of Governments (SCAG): "Global warming poses a serious threat to the economic well-being, public health and natural environment in Southern California and beyond. The potential adverse impacts of global warming include, among others, or production in the quantity and quality of water supply, a rise in sea level, damage to marine and other ecosystems, and an increase in the incidences of infectious diseases" (SCAG 2007:116). Over the past few decades, energy intensity of the national and state economy has been declining due to the shift to a more service-oriented economy. California ranked fifth lowest among the States in carbon dioxide (CO_2) emissions from fossil fuel consumption per unit of gross state product. However, in terms of total CO_2 emissions, "California is second only to Texas in the nation and is the 16th largest source of climate change emissions in the world, exceeding most nations. The SCAG region, with close to half of the state's population and economic activities, is a major contributor to the global warming problem" (SCAG 2007:117).

3.3.1 Greenhouse Gas Background

GHGs include CO_2, methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Carbon dioxide is the most abundant GHG. Other GHGs are less abundant, but have higher global warming potential than CO_2. Thus, emissions of other GHGs are frequently expressed in the equivalent mass of CO_2, denoted as CO_2e. Forest fires, decomposition, industrial processes, landfills, and consumption of fossil fuels for power generation, transportation, heating, and cooking are the primary sources of GHG emissions. The primary GHGs attributed to global climate change are described below.

3.3.1.1 CARBON DIOXIDE (CO_2)

In the atmosphere, carbon generally exists in its oxidized form, as CO_2. Natural sources of CO_2 include the respiration (breathing) of humans, animals, and plants, volcanic outgassing, decomposition of organic matter, and evaporation from the oceans. Anthropogenic sources of CO_2 include the combustion of fossil fuels and wood, waste incineration, mineral production, and deforestation. Anthropogenic sources of CO_2

amount to over 30 billion tons per year, globally (Friedlingstein et al. 2022). Natural sources release substantially larger amounts of CO_2. Nevertheless, natural removal processes, such as photosynthesis by land and ocean-dwelling plant species, cannot keep pace with this extra input of human-made CO_2, and, consequently, the gas is building up in the atmosphere.

3.3.1.1.1 Methane (CH_4)

Methane is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands, termites, and oceans. Decomposition occurring in landfills accounts for the majority of human-generated CH_4 emissions in California and in the United States as a whole. Agricultural processes such as intestinal fermentation, manure management, and rice cultivation are also significant sources of CH_4 in California.

3.3.1.1.2 Nitrous Oxide (N_2O)

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

3.3.1.1.3 Hydrofluorocarbons, Perfluorocarbons, Sulfur Hexafluoride

Hydrofluorocarbons (HFCs) are primarily used as substitutes for ozone-depleting substances regulated under the Montreal Protocol (1987), an international treaty that was approved on January 1, 1989, and was designated to protect the ozone layer by phasing out the production of several groups of halogenated hydrocarbons believed to be responsible for ozone depletion. Perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6) are emitted from various industrial processes, including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. There is no primary aluminum or magnesium production in California; however, the rapid growth in the semiconductor industry leads to greater use of PFCs.

The magnitude of the impact on global warming differs among the GHGs. The effect each GHG has on climate change is measured as a combination of the volume of its emissions, and its global warming potential (GWP). GWPs are one type of simplifies index based upon radiative properties used to estimate the potential future impacts of emissions of different gases upon the climate system, expressed as a function of how much warming would be caused by the same mass of CO_2. Thus, GHG emissions are typically measured in terms of pounds or tons of CO_2 equivalents (CO_2e). GWP are based on a number of factors, including the radiative efficiency (heat-absorbing ability) of each gas relative to that of CO_2, as well as the decay rate of each gas (the amount removed from the atmosphere over a given number of years) relative to that of CO2. The larger GWP, the more that a given gas warms the Earth compared to CO2 over that time period. HFCs, PFCs, and SF_6 have a greater "global warming potential" than CO_2. In other words, these other GHGs have a greater contribution to global warming than CO_2 on a per-mass basis. However, CO_2 has the greatest impact on global warming because of the relatively large quantities of CO_2 emitted into the atmosphere.

A summary of the atmospheric lifetime and GWP of selected gases is presented in Table 5. As indicated in this table, GWPs range from 1 to 23,500 based on IPCC Assessment Reports. IPCC has released three assessment reports (AR4, AR5, and AR6) with updated GWPs, however, CARB reports the statewide GHG inventory using the AR4 GWPs, which is consistent with international reporting standards.

By applying the GWP ratios, project-related equivalent mass of CO_2, denoted as CO_2e emissions can be tabulated in metric tons per year.

Table 5. Global Warming Potentials

Greenhouse Gas	GWP Values for 100-year Time Horizon		
	AR4*	**AR5**	**AR6**
Carbon dioxide (CO_2)	1	1	1
Methane (CH_4)	25	28	Fossil origin – 29.8 Non-fossil origin – 27.2
Nitrous oxide (N_2O)	298	265	273
Select hydrofluorocarbons (HFCs)	124–14,800	4–12,400	–
Sulfur hexafluoride (SF_6)	22,800	23,500	–

Sources: IPCC (2007, 2013, 2022).
* For consistency with the EPA and its Inventory of Greenhouse Gas Reporting, we have represented values from AR4 of the IPCC report in this report.

3.3.2 Greenhouse Gas Emissions Inventories

3.3.2.1 UNITED STATES GHG EMISSIONS

Per the EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2020* (EPA 2022c), total U.S. GHG emissions have decreased by 6.6% from 1990 to 2020; 2005 emissions were 15.8% above 1990 levels. The largest source of GHG emissions from human activities in the United States is from burning of fossil fuels for electricity, heat, and transportation. The latest national GHG emissions are for calendar year 2020, in which total gross U.S. GHG emissions were reported at 5,981.4 million metric tons carbon dioxide equivalent (MMT CO_2e). Emissions decreased from 2019 to 2020 by 543.4 MMT CO_2e and net emissions (including sinks) were 5,222.4 MMT CO_2e.

3.3.2.2 STATEWIDE GHG EMISSIONS

According to California's 2000–2019 GHG emissions inventory, California emitted 409.3 MMT CO_2e in 2019 (CARB 2021). The sources of GHG emissions in California include transportation, industrial uses, electric power production from both in-state and out-of-state sources, commercial and residential uses, agriculture, high global-warming potential substances, and recycling and waste. The California GHG emission source categories (as defined in CARB's 2008 Scoping Plan) and their relative contributions in 2019 are presented in Table 4. Total GHG emissions in 2019 were approximately 22.9 MMT CO_2e less than 2016 emissions. Based on data presented, the 2016 statewide GHG inventory fell below 1990 levels, consistent with AB 32 (CARB 2018b). The declining trend in GHG emissions, coupled with programs that will continue to provide additional GHG reductions going forward, demonstrates that California will continue to reduce emissions below the 2020 target of 431 metric tons CO_2e ($MTCO_2e$) (CARB 2022a).

3.3.2.3 COUNTY OF LOS ANGELES EMISSIONS

In 2015, emissions generated by community activities occurring in the county amounted to 5.5 MMT CO_2e. The transportation and stationary energy sectors were the largest contributors to the inventory. The transportation sector accounts for approximately 2.8 MMT CO_2e (51%) of total GHG emissions, while the stationary energy sector accounts for approximately 1.9 MMT CO_2e (35%) of total GHG emissions. The transportation sector includes emissions from on-road passenger vehicles, trucks, and railways. The stationary energy sector includes emissions from residential, commercial, and institutional uses; industrial buildings; and stationary equipment. The remaining emissions sources include waste and wastewater (8%), refrigerants and other industrial products (5%), and other land-related activities including forestry and agriculture (1%).

To capture the latest emissions profile and emissions trends in Los Angeles County since 2015, the County prepared an updated inventory for the year 2018, given the availability in that year of the most recent complete data set of emissions-generating activity. Both the 2015 and the updated 2018 inventory are discussed in detail in the Los Angeles County revised draft 2045 Climate Action Plan (County of Los Angeles 2023). The 2018 inventory relies on the same protocol and data sources that were used in the 2015 GHG emissions inventory. In 2018, communitywide emissions totaled 5.2 MMT CO_2e. The transportation sector was the greatest contributor, accounting for 52% of emissions and 2.7 MMT CO_2e. The stationary energy sector was the second greatest contributor at 33% and 1.7 MMT CO_2e. Total GHG emissions decreased approximately 7% between 2015 and 2018. The stationary energy sector saw the greatest decrease (11%), followed by the industrial processes and product use sector (6%) and the transportation sector (5%). Emissions from stationary energy decreased primarily because of the increasing level of renewable energy supplied by Southern California Edison into the electricity grid and because certain power-generating facilities decreased their fossil fuel combustion in the intervening years. Emissions from transportation decreased primarily because of vehicle turnover to more fuel-efficient vehicles.

4 REGULATORY SETTING

Federal, state, and local agencies have set ambient air quality standards for certain air pollutants through statutory requirements and have established regulations and various plans and policies to maintain and improve air quality, as described below.

4.1 Federal

4.1.1 Federal Clean Air Act

4.1.1.1 AIR QUALITY

The federal Clean Air Act (CAA), which was passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The CAA delegates primary responsibility for clean air to the EPA. The EPA develops rules and regulations to preserve and improve air quality and delegates specific responsibilities to state and local agencies. Under the act, the EPA has established the NAAQS for six criteria air pollutants that are pervasive in urban environments and for which state and national health-based ambient air quality standards have been established. Ozone (O_3), CO, NO_2, SO_2, lead, and particulate matter (PM_{10} and $PM_{2.5}$) are the six criteria air pollutants. Ozone is a secondary pollutant; NO_X and VOCs are of particular interest as they are precursors to ozone formation. The NAAQS are divided into primary and secondary standards; the primary standards are set to protect human health within an adequate margin of safety, and the secondary standards are set to protect environmental values, such as plant and animal life. The standards for all criteria pollutants are presented in Table 2.

The CAA requires the EPA to designate areas as attainment, nonattainment, or maintenance (previously nonattainment and currently attainment) for each criteria pollutant based on whether the NAAQS have been achieved. The act also mandates that the State submit and implement a State Implementation Plan for areas not meeting the NAAQS. These plans must include pollution control measures that demonstrate how the standards will be met.

4.1.1.2 GREENHOUSE GAS EMISSIONS

The Supreme Court of the United States (SCOTUS) ruled in Massachusetts v. Environmental Protection Agency, 127 S.Ct. 1438 (2007), that CO_2 and other GHGs are pollutants under the federal CAA, which the EPA must regulate if it determines they pose an endangerment to public health or welfare. SCOTUS did not mandate that the EPA enact regulations to reduce GHG emissions. Instead, SCOTUS found that the EPA could avoid taking action if it found that GHGs do not contribute to climate change or if it offered a “reasonable explanation” for not determining that GHGs contribute to climate change.

On April 17, 2009, the EPA issued a proposed finding that GHGs contribute to air pollution that may endanger public health or welfare. On April 24, 2009, the proposed rule was published in the Federal Register under Docket ID No. EPA-HQ-OAR-2009~0171. The EPA stated that high atmospheric levels of GHGs “are the unambiguous result of human emissions and are very likely the cause of the observed increase in average temperatures and other climatic changes.” The EPA further found that “atmospheric concentrations of greenhouse gases endanger public health and welfare within the meaning of Section 202 of the Clean Air Act.” The findings were signed by the EPA Administrator on December 7, 2009. The final findings were published in the Federal Register on December 15, 2009. The final rule was effective on January 14, 2010. While these findings alone do not impose any requirements on industry or other entities, this action is a prerequisite to regulatory actions by the EPA, including, but not limited to, GHG emissions standards for light-duty vehicles.

On July 20, 2011, the EPA published its final rule deferring GHG permitting requirements for CO_2 emissions from biomass-fired and other biogenic sources until July 21, 2014. Environmental groups challenged the deferral. In September 2011, EPA released an “Accounting Framework for Biogenic CO2 Emissions from Stationary Sources,” which analyses accounting methodologies and suggests implementation for biogenic CO_2 emitted from stationary sources.

On April 4, 2012, the EPA published a proposed rule to establish, for the first time, a new source performance standard for GHG emissions. Under the proposed rule, new fossil fuel–fired generating units larger than 25 megawatts are required to limit emissions to 1,000 pounds of CO_2 per megawatt-hour on an average annual basis, subject to certain exceptions.

On April 17, 2022, the EPA issued emission rules for oil production and natural gas production and processing operations, which are required by the CAA under Title 40 of the Code of Federal Regulations (CFR) Parts 60 and 63. The final rules include the first federal air standards for natural gas wells that are hydraulically fractured, along with requirements for several other sources of pollution in the oil and gas industry that currently are not regulated at the federal level.

4.1.2 Toxic Substance Control Act

The Toxic Substances Control Act (TSCA) of 1976 provides the EPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. TSCA became law on October 11, 1976 and became effective on January 1, 1977. The TSCA authorized the EPA to secure information on all new and existing chemical substances, as well as to control any of the substances that were determined to cause unreasonable risk to public health or the environment. Congress later added additional titles to the Act, with this original part designated at Title I – Control of Hazardous Substances. TSCA regulatory authority and program implementation rests predominantly with the federal government (i.e., the EPA). However, the EPA can authorize States to operate their own, EPA-authorized programs for some portions of the statute. TSCA Title IV allows States the flexibility to develop accreditation and certification programs and work practice standards for lead-related inspection, risk assessment, renovation, and abatement that are at least as protective as existing federal standards.

4.1.3 National Emission Standards for Hazardous Air Pollutants (Asbestos)

The EPA's air toxics regulation for asbestos is intended to minimize the release of asbestos fibers during activities involving the handling of asbestos. Asbestos was one of the first hazardous air pollutants regulated under the air toxics program as there are major health effects associated with asbestos exposure (lung cancer, mesothelioma, and asbestosis). On March 31, 1971, the EPA identified asbestos as a hazardous pollutant, and on April 6, 1973, EPA promulgated the Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP), currently found in 40 CFR 61(M). The Asbestos NESHAP has been amended several times, most comprehensively in November 1990. In 1995, the rule was amended to correct cross-reference citations to Occupational Safety and Health Administration, Department of Transportation, and other EPA rules governing asbestos. Air toxics regulations under the CAA have guidance on reducing asbestos in renovation and demolition of buildings; institutional, commercial, and industrial building; large-scale residential demolition; exceptions to the asbestos removal requirements; asbestos control methods; waste disposal and transportation; and milling, manufacturing, and fabrication.

4.2 State

4.2.1 California Clean Air Act

The California Clean Air Act (CCAA) was adopted by the CARB in 1988. The CCAA requires that all air districts in the state endeavor to achieve and maintain CAAQS for Ozone, CO, SO2, and NO2 by the earliest practical date. The CCAA specifies that districts focus particular attention on reducing the emissions from transportation and area-wide emission sources, and the act provides districts with authority to regulate indirect sources. The CARB and local air districts are responsible for achieving CAAQS, which are to be achieved through district-level AQMPs that would be incorporated into the State Implementation Plan. In California, the EPA has delegated authority to prepare State Implementation Plans to CARB, which in turn, has delegated that authority to individual air districts. Each district plan is required to either 1) achieve a 5% annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each non-attainment pollutant or its precursors, or 2) to provide for implementation of all feasible measures to reduce emissions. Any planning effort for air quality attainment would thus need to consider both state and federal planning requirements.

The State of California began to set its ambient air quality standards (i.e., CAAQS) in 1969, under the mandate of the Mulford-Carrell Act. The CCAA requires all air districts of the state to achieve and maintain the CAAQS by the earliest practical date. Table 2 shows the CAAQS currently in effect for each of the criteria pollutants, as well as the other pollutants recognized by the State. As shown in Table 2, the CAAQS are generally more stringent than the corresponding federal standards and incorporate additional standards for sulfates, H_2S, vinyl chloride, and visibility-reducing particles.

4.2.2 California Code of Regulations

The California Code of Regulations (CCR) is the official compilation and publication of regulations adopted, amended, or repealed by the state agencies pursuant to the Administrative Procedure Act. The CCR includes regulations that pertain to air quality emissions. Specifically, Section 2485 in Title 13 of the CCR states that the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds) during construction shall be limited to 5 minutes at any location. In addition, Section 93115 in Title 17 of the CCR states that operation of any stationary, diesel-fueled, compression-ignition engine shall meet specified fuel and fuel additive requirements and emission standards.

4.2.3 Toxic Air Contaminants Regulations

California regulates TACs primarily through the Toxic Air Contaminant Identification and Control Act of 1983 (AB 1807, also known as the Tanner Air Toxics Act) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588 – Connelly). In the early 1980s, the CARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Tanner Air Toxics Act (AB 1807) created California's program to reduce exposure to air toxics. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588) supplements the AB 1807 program by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks (CARB 2011).

In August 1998, CARB identified DPM emissions from diesel-fueled engines as a TAC. In September 2000, CARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles (CARB 2000b). The goal of the plan is to reduce diesel PM_{10} (inhalable particulate matter) emissions and the associated health risk by 75% in 2010, and by 85% by 2020. The plan identified 14 measures that target new and existing on-road vehicles (e.g., heavy-duty trucks and buses, etc.), off-road equipment (e.g., graders, tractors, forklifts, sweepers, and boats), portable equipment (e.g., pumps, etc.), and stationary engines (e.g., stand-by power generators, etc.). During the control measure phase, specific statewide regulations designed to further reduce DPM emissions from diesel-fueled engines and vehicles were evaluated and developed. The goal of each regulation is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce DPM emissions. The project would be required to comply with applicable diesel control measures.

SCAQMD has adopted two rules to limit cancer and noncancer health risks from facilities located within its jurisdiction. Rule 1401 (New Source Review of Toxic Air Contaminants) regulates new or modified facilities, and Rule 1402 (Control of Toxic Air Contaminants from Existing Sources) regulates facilities that are already operating. Rule 1402 incorporates requirements of the AB 2588 program, including implementation of risk reduction plans for significant risk facilities.

4.2.4 Energy Independence and Security Act

The Energy Independence and Security Act of 2007 facilitates the reduction of national GHG emissions by requiring the following:

- increasing the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard that requires fuel producers to use at least 36 billion gallons of biofuel in 2022;
- prescribing or revising standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances;
- requiring approximately 25% greater efficiency for lightbulbs by phasing out incandescent lightbulbs between 2012 and 2014; requiring approximately 200% greater efficiency with lightbulbs, or similar energy savings, by 2020; and
- while superseded by the EPA and NHTSA actions described above, 1) establishing miles-per-gallon targets for cars and light trucks, and 2) directing the NHTSA to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for trucks.

Additional provisions of the Energy Independence and Security Act address energy savings in government and public institutions, promote research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

4.2.5 Executive Order S-3-05, Executive Order B-30-15, and Executive Order B-55-18

In 2005, the governor issued EO S-3-05, establishing statewide GHG emissions reduction targets, as well as a process to ensure the targets are met. The order directed the Secretary of the CalEPA to report every 2 years on the State's progress toward meeting the governor's GHG emission reduction targets. The statewide GHG targets established by Executive Order S-3-05 are as follows:

- By 2010, reduce to 2000 emission levels,
- By 2020, reduce to 1990 emission levels, and
- By 2050, reduce to 80% below 1990 levels.

EO B-30-15, issued by Governor Brown in April 2015, established an additional statewide policy goal to reduce GHG emissions 40% below their 1990 levels by 2030. Reducing GHG emissions by 40% below 1990 levels in 2030 and by 80% below 1990 levels by 2050 (consistent with EO S-3-05) aligns with scientifically established levels needed in the United States to limit global warming below 2 degrees Celsius.

The State Legislature adopted equivalent 2020 and 2030 statewide targets in the California Global Warming Solutions Act of 2006 (also known as AB 32) and Senate Bill (SB) 32, respectively, both of which are discussed below. However, the legislature has not yet adopted a target for the 2050 horizon year. As a result of EO S-3-05, the California Action Team (CAT), led by the Secretary of CalEPA, was formed. The CAT is made of representatives from a number of state agencies and was formed to implement global warming emission reduction programs and to report on the progress made toward meeting statewide targets established under the EO. The CAT reported several recommendations and strategies for reducing GHG emissions and reaching the targets established in the EO.

The CAT stated that "smart" land use is an umbrella term for strategies that integrate transportation and land use decisions. Such strategies generally encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors. These strategies develop more efficient land use patterns within each jurisdiction or region to match population increases, workforce, and socioeconomic needs for the full spectrum of the population. "Intelligent transportation systems" is the application of advanced technology systems and management strategies to improve operational efficiency of transportation systems and the movement of people, goods, and service.

EO B-55-18, issued by Governor Brown in September 2018, establishes a new statewide goal to achieve caron neutrality as soon as possible, but no later than 2045, and achieve and maintain net negative emissions thereafter. Based on this executive order, CARB would work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward this goal, as well as ensuring future scoping plans identify and recommend measures to achieve the carbon neutrality goal.

4.2.6 Assembly Bill 32 — California Global Warming Solution Act

The California Global Warming Solutions Act of 2006 (also known as AB 32) commits the State to achieving the following:

- By 2010, reduce to 2000 GHG emission levels, and
- By 2020, reduce to 1990 levels.

To achieve these goals, which are consistent with the California CAT GHG targets for 2010 and 2020, AB 32 mandates that the CARB establish a quantified emissions cap, institute a schedule to meet the cap, implement regulations to reduce statewide GHG emissions from stationary sources consistent with the CAT strategies, and develop tracking, reporting, and enforcement mechanisms to ensure that reductions are achieved. In order to achieve the reductions, AB 32 requires CARB to adopt rules and regulations in an open, public process that achieves the maximum technologically feasible and cost-effective GHG reductions.

SB 32, signed September 8, 2016, updates AB 32 to include an emissions reduction goal for the year 2030. Specifically, SB 32 requires CARB to ensure that statewide GHG emissions are reduced to 40% below the 1990 level by 2030. The new plan, outlined in SB 32, involves increasing renewable energy use, imposing tighter limits on the carbon content of gasoline and diesel fuel, putting more electric cars on the road, improving energy efficiency, and curbing emissions from key industries.

4.2.7 Climate Change Scoping Plan

In 2008, CARB approved a Climate Change Scoping Plan, as required by AB 32. Subsequently, CARB approved updates of the Climate Change Scoping Plan in 2014 (First Update) and 2017 (2017 Update), with the 2017 Update considering SB 32 (adopted in 2016) in addition to AB 32 (CARB 2014, 2017a). The First Update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals (to the level of 427 MMT CO_2e) defined in the original Scoping Plan. It also evaluates how to align the State's longer-term GHG reduction strategies with other State policy priorities, such as for water, waste, natural resources, clean energy and transportation, and land use. In May 2022, a draft 2022 Scoping Plan Update was circulated for review, with an errata issued by CARB September 21, 2022, to correct several typographical errors. This draft 2022 Scoping Plan Update assesses progress toward the statutory 2030 target, while laying out a path to achieving carbon neutrality no later than 2045. The 2022 Scoping Plan Update, which will likely be adopted by the end of 2022, focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others, and is designed to meet the State's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities.

4.2.8 Assembly Bill 197

AB 197, signed September 8, 2016, is a bill linked to SB 32 that prioritizes efforts to reduce GHG emissions in low-income and minority communities. AB 197 requires the CARB to make available, and update at least annually on its website, the emissions of GHGs, criteria pollutants, and TACs for each facility that reports to CARB and air districts. In addition, AB 197 adds two members of the legislature to the CARB board as ex officio, non-voting members, and also creates the Joint Legislative Committee on Climate Change Policies to ascertain facts and make recommendations to the legislature concerning the State's programs, policies, and investments related to climate change.

4.2.9 Cap-and-Trade Program

The 2008 Climate Change Scoping Plan identified a cap-and-trade program as one of the strategies for California to reduce GHG emissions. The cap-and-trade program is a key element in California's climate plan. It sets a statewide limit on sources responsible for 85% of California's GHG emissions and establishes a price signal needed to drive long-term investment in cleaner fuels and more efficient use of energy. The cap-and-trade rules came into effect on January 1, 2013, and apply to large electric power plants and large industrial plants. In 2015, fuel distributors, including distributors of heating and transportation fuels, also became subject to the cap-and-trade rules. At that stage, the program will encompass around 360 businesses throughout California and nearly 85% of the state's total GHG emissions. Covered entities subject to the cap-and-trade program are sources that emit more than 25,000 $MTCO_2e$ per year. Triggering of the 25,000 $MTCO_2e$ per year "inclusion threshold" is measured against a subset of emissions reported and verified under the California Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (Mandatory Reporting Rule).

Under the cap-and-trade regulation, companies must hold enough emission allowances to cover their emissions and are free to buy and sell allowances on the open market. California held its first auctions of GHG allowances on November 14, 2012 and February 19, 2013. The State has continued conducting tightly controlled auctions for GHG allowances every quarter. California's GHG cap-and-trade system was projected to reduce GHG emissions to 1990 levels by the year 2020, and is projected to achieve an approximate 80% reduction from 1990 levels by 2050.

4.2.10 California Renewables Portfolio Standard

The California Renewable Portfolio Standard (RPS) program (SB 1078; 2002) requires that 20% of the available energy supplies are from renewable energy sources by 2017. In 2006, SB 107 accelerated the 20% mandate to 2010. These mandates apply directly to investor-owned utilities. On April 12, 2011, Governor Brown signed into law SB 2X, which modified the California RPS program to require that both public- and investor-owned utilities in California receive at least 33% of their electricity from renewable sources by the year 2020. SB 2X also requires regulated sellers of electricity to meet an interim milestone of procuring 25% of their energy supply from certified renewable sources by 2016. These levels of reduction are consistent with the Los Angeles Department of Water and Power's (LADWP's) commitment to achieve 35% renewables by 2020. LADWP indicated that 35.2% of its electricity came from renewable resources in year 2021 (LADWP 2021). Therefore, under SB 2X, LADWP currently meets its RPS requirement. Nearly all residents and businesses in unincorporated Los Angeles County receive 50% of their energy from renewable sources as part of the County's commitment to reducing GHG emissions (County of Los Angeles 2021). At its December 7, 2021, meeting, the Los Angeles County Board of Supervisors approved a measure that changed the default energy offering in unincorporated homes to 100% renewable, and most of the renewable energy will be produced in California. This is consistent with one of the targets set by the OurCounty Countywide Sustainability Plan (County of Los Angeles 2019), which calls for eliminating all fossil fuels in the county by 2050, supporting policies and programs to reduce air and climate pollution, and preparing communities for the damaging impacts of climate change.

4.2.11 Senate Bill 350

SB 350, signed October 7, 2015, is the clean Energy and Pollution Reduction Act of 2015. The objectives of SB 350 are 1) to increase the procurement of electricity from renewable sources from 33% to 50% by the end of 2030; and 2) to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.

4.2.12 Senate Bill 100

SB 100, signed September 10, 2018, is the 100 Percent Clean Energy Act of 2018. SB 100 updates the goals of California's RPS and SB 350, as discussed above, to the following: achieve a 50% renewable resources target by December 31, 2026, and achieve a 60% target by December 31, 2030. SB 100 also requires that eligible renewable energy resources and zero-carbon resources supply 100% of retail sales of electricity to California end-use customers and 100% procured to serve all state agencies by December 31, 2045.

4.2.13 Senate Bill 1368

SB 1368, signed September 29, 2006, is a companion bill to AB 32, which requires the California Public Utilities Commission and the California Energy Commission (CEC) to establish GHG emission performance standards for the generation of electricity. These standards also generally apply to power that is generated outside of California and imported into the state. SB 1368 provides a mechanism for reducing the emissions electricity providers, thereby assisting CARB to meet its mandate under AB 32. On January 25, 2007, the California Public Utilities Commission adopted an interim GHG emissions performance standard, which is a facility-based emission standard requiring that all new long-term commitments for baseload generation to serve California customers be with power plants that have GHG emissions no greater than a combined-cycle gas turbine plant. That level is established at 1,100 pounds of CO_2 per megawatt-hour. Furthermore, on May 23, 2007, the CEC adopted regulations that establish and implement an identical emissions performance standard of 1,100 pounds of CO_2 per megawatt-hour.

4.2.14 Assembly Bill 1493 (Pavley I)

AB 1493, passed in 2002, requires the development and adoption of regulations to achieve the maximum feasible reduction in GHG emitted by noncommercial passenger vehicles, light-duty trucks, and other vehicles used primarily for personal transportation in the state. CARB originally approved regulations to reduce GHG from passenger vehicles in September 2004, which took effect in 2009. On September 24, 2009, CARB adopted amendments to these regulations that reduce GHG emissions and new passenger vehicles from 2009 through 2016. Although setting emission standards on automobiles is solely the responsibility of the EPA, the federal CAA allows California to set state-specific emission standards on automobiles, and the State first obtains a waiver from the EPA. The EPA granted California that waiver until July 1, 2009. The comparison between the AB 1493 standards and the federal Corporate Average Fuel Economy standards was completed by CARB, and the analysis determined the California emission standards were 16% more stringent through the 2016 model year and 18% more stringent for the 2020 model year. CARB is also committed to further strengthening these standards beginning with 2020 model year vehicles, to obtain a 45% GHG reduction in comparison to 2009 model years.

In March 2020, the EPA issued the Safer Affordable Fuel-Efficient Vehicles Rule (SAFE) which would roll back feel economy standards and revoke California's waiver. Under this rule, EPA would amend certain average fuel economy and GHG standards for passenger cars covering model years 2021 through 2026. In September 2019, the EPA withdrew the waiver had previously provided in California for the states GHG and Zero Emission Vehicle (ZEV) programs under Section 209 of the Clean Air Act. The withdrawal of the waiver beginning effective on Novembe[r] 26th, 2019. In response, several states including California have a lawsuit challenging the withdrawal of the EPA waiver. These actions continue to be challenged in court. As noted above, on January 20, 2021, President Biden issued an executive order directing all executive departments and agencies to take action, as appropriate, to address federal regulations and other actions taken during the last 4 years that conflict with the administration's climate and environmental justice goals, which include SAFE.

4.2.15 Executive Order S-01-07 (California Low Carbon Fuel Standard)

EO S-01-07, the Low Carbon Fuel Standard (LCFS) (issued January 18, 2007), requires a reduction of at least 10% in the carbon intensity of California transportation fuels by 2020. Regulatory proceedings and implementation of the LCFS was directed to CARB. CARB released a draft version of the LCFS in October 2008. The final regulation was approved by the Office of Administrative Law and filed with the Secretary of State on January 12, 2010; the LCFS became effective on the same day.

The 2017 update has identified LCFS as a regulatory measure to reduce GHG emission to meet the 2030 emissions target. In calculating statewide emissions and targets, the 2017 update has assumed the LCFS be extended to an 18% reduction in carbon intensity beyond 2020. On September 27, 2018, CARB approved a rulemaking package that amended the LCFS to relax the 2020 carbon intensity reduction from 10% to 7.5%, and to require a carbon intensity reduction of 20% by 2030.

4.2.16 Advanced Clean Car Regulations

In 2012, CARB approved the Advanced Clean Cars program, a new emissions control program for model years 2015 through 2025. The components of the advance clean car standards include the Low-Emission Vehicle regulations that reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles, and the Zero Emission Vehicle regulation, which requires manufacturers to produce an increasing number of pure ZEVs, with provisions to also produce plug-in hybrid electric vehicles in the 2018 through 2025 model years period. In March 2017, CARB voted unanimously to continue with the vehicle GHG emission standards and the ZEV programs for cars and light trucks sold in California through 2025.

4.2.17 Senate Bill 375

This bill requires CARB to set regional emissions reduction targets for passenger vehicles. The Metropolitan Planning Organization for each region must then develop a “Sustainable Communities Strategy” (SCS) that integrates transportation, land use, and housing policies to plan how it will achieve the emissions target for its region. If the SCS is unable to achieve the regional GHG emissions reductions targets, then the Metropolitan Planning Organization is required to prepare an alternative planning strategy that shows how the GHG emissions reduction target can be achieved through alternative development patterns, infrastructure, and/or transportation measures.

As required under SB 375, CARB is required to update regional GHG emission targets every 8 years, with last update formally adopted March 2018. As part of the 2018 update, CARB has adopted a passenger vehicle–related GHG reduction target of 19% by 2035 for the SCAG region, which is more stringent than the previous reduction target of 13% for 2035.

4.2.18 California Appliance Efficiency Regulations (Title 20, Sections 1601–1608)

The 2014 Appliance Efficiency Regulations, adopted by the CEC, include standards for new appliances (e.g., refrigerators) and lighting, if they are sold or offered for sale in California. These standards include minimum levels for operating efficiency, and other cost-effective measures, to promote the use of energy- and water-efficient appliances.

4.2.19 California Building Energy Efficiency Standards (Title 24, Part 6)

California's Energy Efficiency Standards for Residential and Nonresidential Buildings, codified in Title 24, Part 6 of the CCR and commonly referred to as "Title 24", were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods.

The 2022 Title 24 Standards go into effect January 1, 2023. The 2022 standards continue to improve upon the previous (2019) Title 24 standards for new construction of, and additions and alterations to, residential and non-residential buildings. The 2022 Title 24 Standards ensure that builders use the most energy-efficient and energy-conserving technologies and construction practices. Nonresidential buildings are projected to use approximately 30% less energy, due mainly to lighting upgrades. Compliance with Title 24 is enforced through the building permit process.

4.2.20 California Green Building Standards (CALGreen Code)

The California Green Building Standards Code—Part 11, Title 24, CCR—known as CALGreen, is the first-in-the-nation mandatory green building standards code. In 2007, California Building Standards Commission developed green building standards in an effort to meet the goals of California's landmark initiative AB 32, which established a comprehensive program of cost-effective reductions of GHGs to 1990 levels by 2020.

The California Building Standards Commission has the authority to propose CALGreen standards for nonresidential structures that include new buildings or portions of new buildings, additions and alterations, and all occupancies where no other state agency has the authority to adopt green building standards applicable to those occupancies. This code features:

- Regulations for energy efficiency, water efficiency and conservation, material conservation and resource efficiency, environmental quality, and more.
- Mandatory provisions for commercial, residential, and public school buildings.
- Appendices with voluntary provisions for all of these occupancies plus hospitals.

Residential and nonresidential provisions are in separate chapters for easier use.

4.2.21 Senate Bill 97

Senate Bill 97 (SB 97) was enacted in 2007. SB 97 required Governor's Office of Planning and Research (OPR) to develop, and the Natural Resources Agency to adopt, amendments to the CEQA Guidelines addressing the analysis and mitigation of GHG emissions. Those CEQA Guidelines amendments clarified several points, including the following:

- Lead agencies must analyze the GHG emissions of proposed projects and must reach a conclusion regarding the significance of those emissions.
- When a project's GHG emissions may be significant, lead agencies must consider a range of potential mitigation measures to reduce those emissions.
- Lead agencies must analyze potentially significant impacts associated with placing projects in hazardous locations, including locations potentially affected by climate change.

- Lead agencies may significantly streamline the analysis of GHGs on a project level by using a programmatic GHG emissions reduction plan meeting certain criteria.
- CEQA mandates analysis of a proposed project's potential energy use (including transportation-related energy), sources of energy supply and ways to reduce energy demand, including through the use of efficient transportation alternatives.

As part of the administrative rulemaking process, the California Natural Resources Agency developed a Final Statement of Reasons explaining the legal and factual bases, intent, and purpose of the CEQA Guidelines amendments. The amendments to the CEQA Guidelines implementing SB 97 became effective on March 18, 2010. SB 97 applies to any environmental impact report (EIR), negative declaration, mitigated negative declaration, or other document required by CEQA, which has not been finalized.

4.3 Regional

4.3.1 South Coast Air Quality Management District

4.3.1.1 AIR QUALITY

SCAQMD shares responsibility with CARB for ensuring that all state and federal ambient air quality standards are achieved and maintained throughout all of Orange County and the urban portions of Los Angeles, Riverside, and San Bernardino Counties. The SCAQMD has jurisdiction over an area of approximately 10,743 square miles, including all of Orange County and Los Angeles County, except for the Antelope Valley; the non-desert portion of western San Bernardino County; and the western and Coachella Valley portions of Riverside County. The Air Basin is a subregion of the SCAQMD jurisdiction.

To meet the CAAQS and NAAQS, the SCAQMD has adopted a series of AQMPs. The 2016 AQMP incorporates the SCAG 2016 Regional Transportation Plan/Sustainable Community Strategy (2016-2040 RTP/SCS)[3] and updated emission inventory methodologies for various source categories. The 2016 AQMP also includes the new federal requirements, implementation of new technology measures, and the continued development of economically sound, flexible compliance approaches.

The AQMP provides emissions inventories, ambient measurements, meteorological episodes, and air quality modeling tools. The AQMP also provides policies and measures to guide responsible agencies in achieving federal standards for healthful air quality in the Air Basin. It also incorporates a comprehensive strategy aimed at controlling pollution from all sources, including stationary sources, on-road and off-road mobile sources, and area sources.

The SCAQMD adopts rules and regulations to implement portions of the AQMP. Several of these rules may apply to project construction or operation. For example, SCAQMD Rule 403 requires the implementation of best available fugitive dust control measures during active construction periods capable of generating fugitive dust emissions from on-site earthmoving activities, construction/demolition activities, and construction equipment travel on paved and unpaved roads.

The SCAQMD is currently in the process of replacing the CEQA Air Quality Handbook, approved in 1993, with the Air Quality Analysis Guidance Handbook (SCAQMD 2022a). In order to assist the CEQA

[3] Due to the AQMD publish date of 2016, the 2016 Regional Transportation Plan was incorporated. As discussed in the 2020-2045 RTP/SCS, the actions and strategies included in the 2020-2045 RTP/SCS remain unchanged from those adopted in the 2012-2035 and 2016-2040 RTP/SCS.

practitioner in conducting an air quality analysis in the interim while this replacement air quality analysis guidance handbook is being prepared, supplemental guidance/information is provided on the SCAQMD website and includes: 1) EMission FACtor (EMFAC) on-road vehicle emission factors; 2) background CO concentrations; 3) localized significance thresholds (LSTs); 4) mitigation measures and control efficiencies; 5) mobile source toxics analysis; 6) off-road mobile source emission factors; 7) $PM_{2.5}$ significance thresholds and calculation methodology; and 8) updated SCAQMD air quality significance thresholds (SCAQMD 2022a). The SCAQMD also recommends using approved models to calculate emissions from land use products projects, such as the California Emission Estimator Model (CalEEMod) Version 2022.1.1.17 (California Air Pollution Control Officers Association [CAPCOA] 2022). These recommendations were followed in the preparation of this analysis.

The SCAQMD has also adopted land use planning guidelines in the *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning* (SCAQMD 2005), which considers impacts to sensitive receptors from facilities that emit TAC emissions. SCAQMD's siting distance recommendations are the same as those provided by CARB. The SCAQMD document introduces land use–related policies that rely on design and distance parameters to minimize emissions and lower potential health risk.

SCAQMD's guidelines are voluntary initiatives recommended for consideration by local planning agencies. The following SCAQMD rules and regulations would be applicable to the project:

- SCAQMD Rule 403 required projects to incorporate fugitive dust control measures at least as effectively as the following measures:
  - Use water to control dust generation during demolition of structures;
  - Clean up mud and dirt carried onto paved streets from the site;
  - Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site;
  - All haul trucks would be covered or would maintain at least 6 inches of freeboard;
  - All material transported off-site shall be sufficiently watered or securely covered to prevent excessive amounts of spillage or dust;
  - Suspend earthmoving operations or additional watering would be implemented to meet Rule 403 criteria if wind gusts exceed 25 miles per hour;
  - The owner or contractor shall keep the construction area sufficiently dampened to control dust caused by construction and hauling, and at all times provide reasonable dust control of dust caused by wind. All paved demolition and construction areas shall be wetted at least twice daily during excavation and construction, and temporary dust cover shall be used to reduce dust emissions; and
  - An information sign shall be posted at the entrance to the construction site that identifies the permitted construction hours and provides a telephone number to call and receive information about the construction project or to report complaints regarding excessive fugitive dust generation. A construction relations officers shall be appointed to act as a community liaison concerning on-site activity, including investigation and resolution of issues related to fugitive dust generating.
- SCAQMD Rule 1113 limits the volatile organic compound content of architectural coating.
- SCAQMD Rule 1403 establishes survey requirements, notifications, and work practice requirements to prevent asbestos emissions from emanating during building renovation and demolition activities. Any activities at the project site that would renovate or modify the existing structures, including the proposed project, would be required to comply with this rule.

- SCAQMD Regulation XIII, New Source Review, requires new on-site facility nitrogen oxide emissions to be minimized through the use of emission control measures (e.g., use of best available technology control technology for new combustion sources such as boilers and water heaters).

SCAQMD has adopted two rules to limit cancer and non-cancer health risks from facilities located within its jurisdiction. Rule 1401 (New Source Review of Toxic Air Contaminants) regulates new or modified facilities, and Rule 1402 (Control of Toxic Air Contaminants from Existing Sources) regulates facilities that are already operating. Rule 1402 incorporates requirements of the AB 2588 program, including implementation of risk reduction plans for significant risk facilities.

4.3.1.2 GREENHOUSE GAS EMISSIONS

SCAQMD adopted a "Policy on Global Warming and Stratospheric Ozone Depletion" on April 6, 1990. The policy commits the SCAQMD to consider global impacts in rulemaking and in drafting revisions to the Air Quality Management Plan. In March 1992, the SCAQMD Governing Board reaffirmed this policy and adopted amendments to the policy to include the following directives:

- Phase out the use and corresponding emissions of chlorofluorocarbons, methyl chloroform, carbon tetrachloride, and halons by December 1995;
- Phase out the large-quantity use and corresponding emissions of hydrochlorofluorocarbons by the year 2000;
- Develop recycling regulations for hydrochlorofluorocarbons (e.g., SCAQMD Rules 1411 and 1415);
- Develop an emissions inventory and control strategy for methyl bromide; and
- Support the adoption of a California GHG emission reduction goal.

In 2008, SCAQMD released draft guidance regarding interim CEQA GHG significance thresholds. Within its October 2008 document, SCAQMD proposed the use of a percent emission reduction target to determine significance for commercial/residential projects that emit greater than 3,000 $MTCO_2e$ per year. Under this proposal, commercial/residential projects that emit fewer than 3,000 $MTCO_2e$ per year would be assumed to have a less-than-significant impact on climate change. SCAQMD has yet to adopt a GHG significance threshold for land use development projects such as commercial and/or residential projects.

4.3.2 Southern California Association of Governments

SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties, and addresses regional issues relating to transportation, the economy, community development, and the environment. SCAG coordinates with various air quality and transportation stakeholders in Southern California to ensure compliance with the federal and state air quality requirements, including applicable federal, state, and air district laws and regulations. As the federally designated Metropolitan Planning Organization for the six-county Southern California region, SCAG is required by law to ensure that transportation activities conform to, and are supportive of, the goals of regional and state air quality plans to attain the NAAOS. In addition, SCAG is a co-producer, with SCAQMD, of the transportation strategy and transportation control measure sections of the 2016 AQMP. The development of the 2016 AQMP relies on population and transportation growth projections contained in SCAG's 2016-2040 RTP/SCS.

On September 3, 2020, SCAG's Regional Council adopted an updated RTP/SCS known as the 2020-2045 RTP/SCS or connect SoCal. As with the 2016-2020 RTP/SCS, the purpose of the 2020-2045 RTP/SCS is to meet the mobility needs of the six-county SCAG region over the subject planning period through a roadmap identifying sensible ways to expand transportation options, improve air quality, and bolster Southern California long-term economic viability. On October 30, 2020, the CARB accepted SCAG's determination that the SCS met the applicable state GHG emissions targets. The goals and policies of the 2020- 2045 RTP/SCS are similar to, and consistent with, those of the 2016-2040 RTP/SCS. In addition, CARB's new target requiring a 19% reduction in per-capita GHG emissions has been included in the 2020-2045 RTP/SCS, to fulfill SB 375 compliance with respect to meeting the State's GHG emission reduction goals.

4.4 County of Los Angeles

4.4.1 County of Los Angeles General Plan

The County Board of Supervisors adopted the County of Los Angeles 2035 General Plan (2035 General Plan) on October 6, 2015. The adopted County General Plan represents a compromise comprehensive update intended to reflect changing demographics, growth, and infrastructure conditions in the county. The County General Plan contains an Air Quality Element that addresses air quality and related issues. Included in the Air Quality Element are goals encouraging mixed-use development, the use of "green building" principles, energy and water efficiency, reducing vehicle miles traveled and vehicle trips, and promoting alternative modes of transportation.

The Air Quality Element of the County General Plan establishes the following goals that are relevant to the project:

- Goal AQ 1: Protection from exposure to harmful air pollutants
- Goal AQ 2: The reduction of air pollution and mobile source emissions through coordinated land use, transportation, and air quality planning.
- Goal AQ3: Implementation of plans and programs to address the impact of climate change.
    - Policy AQ 3.2 - Reduce energy consumption of County operations by 20% by 2015.
    - Policy AQ 3.3 - Reduce water consumption of County operations.
    - Policy AQ 3.5 - Encourage energy conservation in new development and municipal operations.
    - Policy AQ 3.6 - Support rooftop solar facilities on new and existing buildings.

The County has the authority and responsibility to reduce air pollution by assessing and mitigating air emissions resulting from its land use decisions. Consistent with CEQA, the County assesses the air quality impacts of new development projects and requires mitigation of potentially significant air quality impacts by applying required conditions to projects through the County approval process. Depending on the location, the County uses either SCAQMD's CEQA Air Quality Handbook and SCAQMD's supplemental online guidance/information or CEQA guidance from the Antelope Valley Air Quality Management District for the environmental review of plans and development proposals within its jurisdiction. These guidance documents are more specific than the 2035 General Plan goals and policies noted above. Implementation of these guidance documents and consistency with the thresholds contained therein generally ensures that development projects are supportive and consistent with the 2035 General Plan.

4.4.2 OurCounty – Los Angeles Countywide Sustainability Plan

OurCounty is a regional sustainability plan for the County of Los Angeles and was adopted by the Board of Supervisors on Tuesday, August 6, 2019. It outlines what local governments and stakeholders can do to enhance the well-being of every community in the county while reducing damage to the natural environment and adapting to the changing climate, particularly focusing on those communities that have been disproportionately burdened by environmental pollution. The plan envisions streets and parks that are accessible, safe, and welcoming to everyone; air, water, and soil that are clean and healthy; affordable housing that enables all residents to thrive in place; and a just economy that runs on renewable energy instead of fossil fuels. OurCounty is organized around 12 goals for a sustainable Los Angeles County:

- ***Goal 1.*** *Resilient and healthy community environments where residents thrive in place.* The County will protect low-income communities and communities of color from pollution, reduce health and economic inequities, and support more resilient and inclusive communities.
- ***Goal 2.*** *Buildings and infrastructure that support human health and resilience.* The buildings and infrastructure of both yesterday and tomorrow will use more efficient technologies and practices that reduce resource use, improve health, and increase resilience.
- ***Goal 3.*** *Equitable and sustainable land use and development without displacement.* With policy tools such as anti-displacement measures, existing community members can remain in and strengthen their neighborhoods and networks while accepting new residents through more compact, mixed-use development.
- ***Goal 4.*** *A prosperous LA County that provides opportunities for all residents and businesses and supports the transition to a green economy.* We will support the growth of green economy sectors through our procurement practices, land use authority, and various economic and workforce development incentives.
- ***Goal 5.*** *Thriving ecosystems, habitats, and biodiversity.* The region's ecosystems, habitats, and biodiversity are under stress from urbanization and climate change. Careful planning will ensure that our ecosystems, including urban habitats, thrive even as our region becomes increasingly urbanized.
- ***Goal 6.*** *Accessible parks, beaches, recreational waters, public lands, and public spaces that create opportunities for respite, recreation, ecological discovery, and cultural activities.* The County will help make parks and public lands more accessible and inclusive and will manage them carefully so that all residents may enjoy their benefits.
- ***Goal 7.*** *A fossil fuel-free LA County.* By supporting an efficient transition to a zero emission energy and transportation system, the County will be a leader in taking action to address the climate crisis.
- ***Goal 8.*** *A convenient, safe, clean, and affordable transportation system that enhances mobility while reducing car dependency.* By developing programs that focus on reducing the number of miles people travel in private vehicles, the County will help people choose alternatives to single-occupancy vehicles. These programs will expand residents' mobility, including those residents whose limited automobile access translates to stifled economic opportunity.
- ***Goal 9.*** *Sustainable production and consumption of resources.* The County will effectively manage our waste, water, energy, and material resources by improving our ability to promote integrative and collaborative solutions at the local and regional scale.

- ***Goal 10.*** *A sustainable and just food system that enhances access to affordable, local, and healthy food.* The County of Los Angeles will leverage its capital assets, public services, and regulatory authority to improve access to healthy food within County boundaries while optimizing its purchasing power and business services to make food production more sustainable.
- ***Goal 11.*** *Inclusive, transparent, and accountable governance that facilitates participation in sustainability efforts, especially by disempowered communities.* The County will act to create a more inclusive and accountable governance structure, in order to build stronger communities and better-informed policy and programs.
- ***Goal 12.*** *A commitment to realize OurCounty sustainability goals through creative, equitable, and coordinated funding and partnerships.* The County will seek to strengthen partnerships, establish new funding techniques, and leverage its own purchasing power to advance the goals of OurCounty.

4.5 City of Los Angeles

Although the project site is located within the city of Los Angeles, it is owned by the County of Los Angeles. Accordingly, the project is subject to the regulatory controls of the County of Los Angeles and not the City of Los Angeles. Nonetheless, consideration of the city-level regulatory framework fulfills the intended purpose of CEQA as disclosing all relevant information associated with the project.

4.5.1 City of Los Angeles General Plan

The Air Quality Element of the City General Plan was adopted on November 24, 1992, and sets forth the goals, objectives, and policies which guide the City of Los Angeles (City) in the implementation of its air quality improvement programs and strategies. The Air Quality Element acknowledges the interrelationships among transportation and land use planning in meeting the City's mobility and air quality goals. The Air Quality Element of the City General Plan establishes six goals:

- Goal 1: Good air quality in an environment of continued population growth and healthy economic structure;
    - Objective 1.1- It is the objective of the City of Los Angeles to reduce air pollutants consistent with the Regional Air Quality Management Plan (AQMP), increase traffic mobility, and sustain economic growth citywide.
    - Objective 1.3- It is the objective of the City of Los Angeles to reduce particulate air pollutants emanating from unpaved areas. parking lots, and construction sites.
        - Policy 1.3.1- Minimize particulate emissions from construction sites.
        - Policy 1.3.2- Minimize particulate emissions from unpaved roads and parking lots associated with vehicular traffic.
- Goal 2: Less reliance on single-occupant vehicles with fewer commute and non-work trips;
    - Objective 2.1- It is the objective of the City of Los Angeles to reduce work trips as a step toward attaining trip reduction objectives necessary to achieve regional air quality goals.
        - Policy 2.1.1- Utilize compressed work weeks and flextime, telecommuting, carpooling, vanpooling, public transit, and improve walking/bicycling–related facilities in order to reduce Vehicle Trips and/or Vehicle Miles Traveled (VMT) as an employer and encourage the private sector to do the same to reduce work trips and traffic congestion.
        - Policy 2.2.2- Encourage multi-occupant vehicle travel and discourage single-occupant vehicle travel by instituting parking management practices.

- Objective 4.1- It is the objective of the City of Los Angeles to include regional attainment of ambient air quality standards as a primary consideration in land use planning.
  - Policy 4.1.1- Coordinate with all appropriate regional agencies in the implementation of strategies for the integration of land use, transportation, and air quality policies.
- Objective 4.2- It is the objective of the City of Los Angeles to reduce vehicle trips and vehicle miles traveled associated with land use patterns.
  - Policy 4.2.2- Improve accessibility for the City's residents to places of employment, shopping centers, and other establishments.
  - Policy 4.2.3- Ensure that new development is compatible with pedestrians, bicycles, transit, and alternative fuel vehicles.
  - Policy 4.2.4- Require that air quality impacts be a consideration in the review and approval of all discretionary projects.
  - Policy 4.2.5- Emphasize trip reduction, alternative transit and congestion management measures for discretionary projects.

- Goal 3: Efficient management of transportation facilities and systems infrastructure using cost-effective system management and innovative demand-management techniques;
  - Objective 5.1- It is the objective of the City of Los Angeles to increase energy efficiency of City facilities and private developments.
    - Policy 5.1.2- Effect a reduction in energy consumption and shift to nonpolluting sources of energy in its buildings and operations.
    - Policy 5.1.2- Effect a reduction in energy consumption and shift to nonpolluting sources of energy in its buildings and operations.
    - Policy 5.1.4- Reduce energy consumption and associated air emissions by encouraging waste reduction and recycling.
  - Objective 5.3- It is the objective of the City of Los Angeles to reduce the use of polluting fuels in stationary sources.
    - Policy 5.3.1- Support the development and use of equipment powered by electric or low-emitting fuels.

- Goal 4: Minimal impacts of existing land use patterns and future land use development on air quality by addressing the relationship between land use, transportation, and air quality;
  - Objective 4.1- It is the objective of the City of Los Angeles to include regional attainment of ambient air quality standards as a primary consideration in land use planning.
    - Policy 4.1.1- Coordinate with all appropriate regional agencies in the implementation of strategies for the integration of land use, transportation, and air quality policies.
  - Objective 4.2- It is the objective of the City of Los Angeles to reduce vehicle trips and vehicle miles traveled associated with land use patterns.
    - Policy 4.2.2- Improve accessibility for the City's residents to places of employment, shopping centers, and other establishments.
    - Policy 4.2.3- Ensure that new development is compatible with pedestrians, bicycles, transit, and alternative fuel vehicles.
    - Policy 4.2.4- Require that air quality impacts be a consideration in the review and approval of all discretionary projects.
    - Policy 4.2.5 - Emphasize trip reduction, alternative transit and congestion management measures for discretionary projects.

- Goal 5: Energy efficiency through land use and transportation planning, the use of renewable resources and less-polluting fuels, and the implementation of conservative measures including passive measures such as site orientation and tree planting; and
- Goal 6: Citizens' awareness of the links between personal behavior and air pollution, and participation and efforts to reduce air pollution.

In accordance with CEQA requirements. the City assesses the air quality impacts of new development projects, requires mitigation of potentially significant air quality impacts by conditioning discretionary permits, and monitors and enforces implementation of such mitigation. The City uses SCAQMD's CEQA Air Quality Handbook and SCAQMD's supplemental online guidance/information for the environmental review of plans and development proposals within its jurisdiction.

4.5.2 City of Los Angeles Green LA Action Plan

The City of Los Angeles began addressing the issue of global climate change by publishing *Green LA, An Action Plan to Lead the Nation in Fighting Global Warming* ("LA Green Plan") in 2007. This document outlined the goals and actions the City has established to reduce the generation and emission of GHGs from both public and private activities. According to the LA Green Plan, the City is committed to the goal of reducing CO_2 emissions to 35% below 1990 levels by the year 2030. To achieve this, the City has been implementing the following:

- Increase the generation of renewable energy;
- Improve energy conservation and efficiency; and
- Change transportation and land use patterns to reduce dependence on automobiles.

4.5.3 City of Los Angeles Green New Deal/Sustainable City Plan

Rather than an adopted plan, the Sustainable City pLAn is a mayoral initiative released in 2015 that includes both short-term and long-term aspirations through the year 2035 in various topic areas, including: water, solar power, energy-efficient buildings, carbon and climate leadership, waste and landfills, housing and development, mobility and transit, and air quality, among others.

In 2019, the first 4-year update to the 2015 Sustainable City pLAn was released. While not a plan intended solely to reduce GHG emissions. this updated document, known as the City's Green New Deal, expands upon the City's vision for a sustainable future and provides accelerated targets and new goals, including climate mitigation. The Green New Deal has established targets such as 100% renewable energy by 2045, installation of 10,000 publicly available electric vehicle chargers by 2022 and 28,000 by 2028, diversion of 100% of waste by 2050, and recycling 100% of wastewater by 2035.

5 THRESHOLDS OF SIGNIFICANCE

5.1 Air Quality

Based upon the environmental checklist presented in Appendix G of the State CEQA Guidelines, the project would have a significant impact on air quality if it would:

- Conflict with or obstruct implementation of the applicable air quality plan (Impact AQ-1);

- Result in cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under applicable federal or state ambient air quality standards (Impact AQ-2);
- Expose sensitive receptors to substantial pollutant concentrations (Impact AQ-3); or
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people (Impact AQ-4).

A discussion of applicable thresholds of significance and significance determination follow.

5.1.1 Construction

The SCAQMD has established significance thresholds based on the State CEQA significance criteria. Specifically, based on criteria set forth in the SCAQMD CEQA Handbook Air Quality Significance Thresholds, the project would have a significant impact with regard to construction emissions if any of the following would occur:

- Regional emissions from both direct and indirect sources would exceed any of the following SCAQMD-prescribed threshold levels: 1) 100 pounds per day for NO_X; 2) 75 pounds per day for VOCs; 3) 150 pounds per day for PM_{10} or sulfur oxides; 4) 55 pounds per day for $PM_{2.5}$; or 5) 550 pounds per day for CO.
- Maximum on-site daily localized emissions exceed the LST, resulting in predicted ambient concentrations in the vicinity of the project site greater than the most stringent ambient air quality standards for CO (20 parts per million [ppm] over a 1-hour period, or 9.0 ppm averaged over an 8-hour period) and NO_2 (0.18 ppm over a 1-hour period, 0.1 ppm over a 3-year average of the 98th percentile of the daily maximum 1-hour average, 0.03 ppm averaged over an annual period).
- Maximum on-site localized PM_{10} or $PM_{2.5}$ emissions during construction exceed the applicable LSTs, resulting in predicted ambient concentrations in the vicinity of the project site to exceed the incremental 24-hour threshold of 10.4 micrograms per cubic meter ($\mu g/m^3$) or 1.0 $\mu g/m^3$ PM_{10} averaged over an annual period.

5.1.2 Operations

Based on criteria set forth in the SCAQMD CEQA Handbook Air Quality Significance Thresholds, the project would have a significant impact with regard to project operations if any of the following would occur:

- Operational emissions exceed any of the following SCAQMD prescribed threshold levels: 1) 55 pounds per day for NO_X; 2) 55 pounds per day for VOCs; 3) 150 pounds per day for PM_{10} or sulfur oxides; 4) 55 pounds per day for $PM_{2.5}$; and 5) 550 pounds per day for CO.
- Maximum on-site daily localized emissions exceed the LST, resulting in predicted ambient concentrations in the vicinity of the project site greater than the most stringent ambient air quality standards for CO (20 ppm over a 1-hour period or 9.0 ppm averaged over an 8-hour period) and NO_2 (0.18 ppm over a 1-hour period, 0.1 ppm over a 3-year average of the 98th percentile of the daily maximum 1-hour average, 0.03 ppm averaged over an annual period).
- Maximum on-site localized operational PM_{10} or $PM_{2.5}$ emissions exceed the incremental 24-hour threshold of 2.5 $\mu g/m^3$ or 1.0 $\mu g/m^3$ PM_{10} averaged over an annual period.
- The project causes or contributes to an exceedance of the California 1-hour or 8-hour CO standards of 20 or 9.0 ppm, respectively.

- The project creates an odor nuisance pursuant to SCAQMD Rule 402.

5.1.3 Toxic Air Contaminants

The determination of significance shall be made on a case by case basis, considering the following factors:

- The regulatory framework for the toxic material(s) and process(es) involved;
- The proximity of the toxic air contaminants to sensitive receptors;
- The quantity, volume, and toxicity of the contaminants expected to be emitted;
- The likelihood and potential level of exposure; and
- The degree to which project design would reduce the risk of exposure.

Based on the criteria set forth in SCAQMD's CEQA Air Quality Handbook, the project may have a significant TAC impact if:

- The project results in the exposure of sensitive receptors to carcinogenic or toxic air contaminants that exceed the maximum incremental cancer risk of 10 in 1 million or an acute or chronic hazard index of 1.0. For projects with a maximum incremental cancer risk between 1 in 1 million and 10 in 1 million, a project would result in a significant impact if the cancer burden exceeds 0.5 excess cancer cases.

5.1.4 Consistency with Applicable Air Quality Plans

CEQA Guidelines Section 15125 requires an analysis of project consistency with applicable governmental plans and policies. In accordance with SCAQMD's CEQA Air Quality Handbook, the following criteria were used to evaluate the project's consistency with SCAQMD's AQMP and SCAG's regional plans and policies:

- Criterion 1: Will the project result in any of the following:
  - An increase in the frequency or severity of existing air quality violations;
  - Cause or contribute to new air quality violations; or
  - Delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP?
- Criterion 2: Will the project exceed the assumptions utilized in preparing the AQMP?
  - Is the project consistent with the population and employment growth projections upon which AOMP forecasted emission levels are based;
  - Does the project include air quality mitigation measures; or
  - To what extent is the project development consistent with AQMP control measures?

As previously noted, the County assesses the air quality impacts of new development projects and requires mitigation of potentially significant air quality impacts by applying required conditions to projects through the County approval process in accordance with the SCAQMD's CEQA Air Quality Handbook (SCAQMD 2022a). This guidance document is more specific than the 2035 General Plan goals and policies as well as the Air Quality Element of the City General Plan. Ensuring consistency with the SCAQMD's CEQA Air Quality Handbook and AQMP control measures would ensure that the project supports and is consistent with the air quality goals and policies contained in the 2035 General Plan and the City General Plan.

5.1.5 Cumulative Impacts

Based on SCAQMD guidance, individual construction projects that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also cause a cumulatively considerable increase in emissions for those pollutants for which the Air Basin is in non-attainment. As discussed in the SCAQMD's White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution (2003a):

> As Lead Agency, the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. … Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant (SCAQMD 2003b:D-3).

The cumulative analysis of air quality impacts within this analysis follows SCAQMD's guidance such that construction or operational project emissions will be considered cumulatively considerable if project-specific emissions exceed an applicable SCAQMD-recommended daily threshold.

5.1.6 Localized Significance Thresholds

The assessment of the project's potential to expose sensitive receptors to substantial pollutant concentrations (Threshold AQ-3) includes an LST analysis, as recommended by the SCAQMD, to evaluate the potential of localized air quality impacts to sensitive receptors in the immediate vicinity of the project; a CO hot spot assessment; and construction and operation HRA analyses. For project sites of 5 acres or less, the SCAQMD LST Methodology (SCAQMD 2009) includes lookup tables that can be used to determine the maximum allowable daily emissions that would satisfy the localized significance criteria (i.e., the emissions would not cause an exceedance of the applicable concentration limits for NO_2, CO, PM_{10}, and $PM_{2.5}$) without performing project-specific dispersion modeling. Although the proposed development area of the project site is greater than 5 acres (estimated to be 13 acres), the project would disturb less than 5 acres in 1 day, as discussed in detail in the following text, so it is appropriate to use the lookup tables for the LST evaluation.

The LSTs for NO_2 and CO represent the allowable increase in concentrations above background levels in the vicinity of a project that would not cause or contribute to an exceedance of the relevant ambient air quality standards, while the threshold for PM_{10} represents compliance with Rule 403 (Fugitive Dust). The LST for $PM_{2.5}$ is intended to ensure that construction emissions do not contribute substantially to existing exceedances of the $PM_{2.5}$ ambient air quality standards. The allowable emission rates depend on the following parameters:

- Source-receptor area (SRA) in which the project is located
- Size of the project site
- Distance between the project site and the nearest sensitive receptor (e.g., residences, schools, hospitals)

The project site is located in SRA 1 (Central Los Angeles County). The SCAQMD provides guidance for applying CalEEMod to the LSTs. LST pollutant screening level concentration data are currently published for 1-, 2-, and 5-acre sites for varying distances. The maximum number of acres disturbed on the peak day was estimated using the *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds* (SCAQMD 2011), which provides estimated acres per 8-hour day for crawler tractors, graders, rubber-tired dozers, and scrapers. Based on the SCAQMD guidance, and assuming an excavator can grade 0.5 acre per 8-hour day (similar to graders, dozers, and tractors), it was estimated that the maximum daily area on the project site that would be disturbed by off-road equipment would be 4.5 acres per day (five rubber-tired dozers and four tractor/loader/backhoe operating during the demolition and site preparation phases).

The nearest sensitive-receptor land use (a residence) is located approximately 87 feet north and east of the project's limits of construction. Therefore, the LST receptor distance was assumed to be 87 feet (26.5 meters). The LST values from the SCAQMD lookup tables for SRA for a 5-acre project site and a receptor distance of 25 meters (82 feet) are shown below in Table 6.

Table 6. Localized Significance Thresholds for SRA 1 (Central Los Angeles County)

Pollutant	Threshold (pounds per day)
NO_2	161
CO	1,861
PM_{10} (Operations)	4
PM_{10} (Construction)	16
$PM_{2.5}$ (Operations)	2
$PM_{2.5}$ (Construction)	8

Source: SCAQMD (2009)

Note: LST thresholds determined based on the values for 5-acre site at a distance of 25 meters (82 feet) from the nearest sensitive receptor.

The construction and operational HRA methodology and assumptions are presented in Section 6.4.1 and 6.4.2, respectively. The HRA analyses apply the SCAQMD risk thresholds, which are a maximum incremental cancer risk greater than or equal to 10 in 1 million and a chronic hazard index greater than or equal to 1.0 (project increment). The CO hot spot assessment and operation HRA are evaluated under the potential for the project to expose sensitive receptors to substantial pollutant concentrations (Threshold AQ-3), along with the LST analysis.

The potential for the project to result in an odor impact (Threshold AQ-4) is based on the project's land use type and operational activity, and the potential for the project to create an odor nuisance pursuant to SCAQMD Rule 402.

5.2 Greenhouse Gases

Consistent with Appendix G of the State CEQA Guidelines, a project would have a significant GHG impact if it would:

- Generate GHG emissions, either directly or indirectly, that may have an adverse effect on the environment (Impact GHG-1); or
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs (Impact GHG-2).

State CEQA Guidelines Section 15064.4 recommends that lead agencies quantify GHG emissions projects and consider several other factors that may be used in the determination of significance of project-related GHG emissions, including: the extent to which the project may increase or reduce GHG emissions; whether the project exceeds an applicable significant threshold; and the extent to which the project complies with the regulations or requirements adopted to implement a reduction or mitigation of GHG.

Section 15064.4 does not establish a threshold of significance. Lead agencies have the discretion to establish significance thresholds for their respective jurisdictions, and in establishing those thresholds, a lead agency may appropriately look at thresholds developed by other public agencies, or suggested by other experts, such as the CAPCOA, as long as any threshold chosen is supported by substantial evidence (see State CEQA Guidelines Section 15064.7(c)). The State CEQA Guidelines also clarify that the events of GHG emissions are cumulative, and should be analyzed in the context of CEQA's requirements for cumulative impact analysis (see State CEQA Guidelines Section 15130(f)). It is noted that the State CEQA Guidelines were amended in response to SB 97. In particular, the State CEQA Guidelines were amended to specify that compliance with the GHG emissions reduction plan renders a cumulative impact less than significant.

Per State CEQA Guidelines Section 15064(h)(3), a project's incremental contribution to a cumulative impact can be found not cumulatively considerable if the project would comply with an approved plan or mitigation program that provides specific requirements that would avoid or substantially lessen the cumulative problem within the geographic area of the project. To qualify, such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency. Examples of such programs include "water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plans [and] plans or regulations for the reduction of greenhouse gas emissions" (14 CCR Section 15064(h)(3)). Put another way, State CEQA Guidelines Section 15064(h)(3) allows a lead agency to make a finding of less than significant for GHG emissions if a project complies with adopted programs, plans, policies, and/or other regulatory strategies to reduce GHG emissions.

For example, the San Joaquin Valley Air Pollution Control District (SJVAPCD), CEQA Determinations of Significance tor Projects Subject to ARB's GHG cap-and-trade Regulation, APR- 2030 (June 25, 2014), "determined that GHG emissions increases that are covered under ARB's cap-and-trade regulation cannot constitute significant increases under CEQA..." Further, the SCAQMD has taken this position in CEQA documents it has produced as a Lead Agency. The SCAQMD has prepared three Negative Declarations and one Draft Environmental Impact Report that demonstrate the SCAQMD has applied its 10,000 $MTCO_2e$ per year significance threshold in such a way that GHG emissions covered by the cap-and-trade program do not constitute emissions that must be measured against the threshold.

Although GHG emissions can be quantified, CARB, SCAQMD, and the County have not adopted quantitative project-level significance thresholds for GHG emissions that would be applicable to the project. The OPR released a Discussion Draft: CEQA and Climate Change Advisory in December 2018 to provide updates and regulatory changes to a prior 2008 climate change advisory. The discussion draft addresses project-level analyses of GHG impacts and recognizes, "lead agency discretion in determining the appropriate methodologies, thresholds, and if necessary, mitigation measures" (OPR 2018:2).

Furthermore, the discussion draft explains that significance thresholds may be based on efficiency metrics, compliance with state goals and percentage reduction from Business-as-Usual emissions, consistency with relevant regulations, plans, policies, and regulatory programs, or an absolute numerical/quantitative threshold (OPR 2018). Per State CEQA Guidelines Section 15064.4(b), "in determining the significance of a project's greenhouse gas emissions, the lead agency should focus its analysis on the reasonably foreseeable incremental contribution of the project's emissions to the effects of climate change. A project's incremental contribution may be cumulatively considerable even if it appears relatively small compared to statewide, national or global emissions." When determining the significance of GHG impacts, lead agencies should consider the project's impact as compared to the existing environmental setting, whether the project exceeds a threshold of significance, and compliance with relevant GHG-related plans (see, for example, State CEQA Guidelines Section 15064.4(b)). Regarding the latter criterion, lead agencies should consider "the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions (see, for example, State CEQA Guidelines Section 15183.5(b)). Per State CEQA Guidelines Section 15064.4(b)(3), such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of GHG emissions.

For the project, Los Angeles County, as the Lead Agency, has selected a 3,000 $MTCO_2e$ per year quantitative threshold to evaluate significance for GHG emissions. This is the interim GHG screening-level significance threshold. SCAQMD recommended this interim GHG screening-level threshold for projects that are in residential and commercial sectors[4] (SCAQMD 2008b). It is important to note that the GHG threshold of 3,000 $MTCO_2e$ per year is based on an interim threshold developed in 2008 to address the State's year 2020 and 2050 GHG reduction goals established under AB 32, which does not address the State's more recent GHG-reduction target of achieving carbon neutrality by 2045, per Executive Order B-55-18 (2018).

To achieve carbon neutrality by 2045, it is recommended that future development include measures to support building decarbonization, including the replacement of natural gas service with other alternatives, such as use of electrically-powered equipment (CARB 2022b; CEC 2021). Based on recent GHG threshold updates and supportive documentation prepared by the Bay Area Air Quality Management District (BAAQMD) and Sacramento Metropolitan Air Quality Management District (SMAQMD), it is recommended that future development prohibit the installation of natural gas infrastructure/use of natural gas–fired appliances, to the maximum extent possible, and incorporate electric-vehicle charging stations beyond what is required by current building standards in order to contribute its "fair share" of what would be required for the State to achieve its carbon neutrality goal (BAAQMD 2022; SMAQMD 2020). As a result, in addition to the GHG threshold of 3,000 $MTCO_2e$/year noted above, project-generated GHG emissions would also be considered to have a potentially significant impact if the project would not prohibit the installation of natural gas–fired appliances/equipment, to the maximum extent possible, or prohibit the installation of electric-vehicle charging stations beyond what is required by current building standards. As an additional significance criterion, consistency with the applicable plans and policies to reduce GHG emissions, including the emissions reduction policies, strategies, and measures discussed within CARB's Climate Change Scoping Plan, SCAG's 2020-2045 RTP/SCS, and the County of Los Angeles General Plan, was additionally evaluated.

6 METHODOLOGY

This analysis focuses on the potential change in the air quality environment due to implementation of the project. Air pollution emissions would result from both construction and operation of the project. Specific methodologies used to evaluate these emissions are discussed below.

The analysis is based on project specifics and default values in the latest versions of CalEEMod. Accordingly, this analysis has been conducted with the most recent available tools prepared and accepted by the regulatory agencies. The project phases have been grouped into six CalEEMod phases, based on the types of equipment and workload: 1) demolition; 2) site preparation; 3) grading; 4) building construction; 5) paving; and 6) architectural coating.

[4] While the La Brea Tar Pits Master Plan contemplates development that is not considered residential or commercial, the construction and operational attributes of the project (e.g., energy demand, water demand, offroad and stationary sources) are like that of development in the residential and commercial sectors. GHG emissions of residential, commercial, and museum facilities are similar in they are focused on mobile sources, energy sources, and off-road and stationary sources. Also, approaches to reducing GHGs will be similar for all these land use types and will center around efficiency improvements of the buildings, efficiency improvements of equipment, and switching to energy sources with lower GHG emissions.

The 13-acre project site has been divided into the following land uses for purposes of CalEEMod: 1) parking; 2) other non-asphalt surfaces; 3) educational library; and 4) recreational city park. This analysis includes quantification of construction and operation off-road equipment, fugitive dust, and on-road mobile sources.

6.1 Construction Emissions

The SCAQMD published the CEQA Air Quality Handbook in November 1993 to assist lead agencies, as well as consultants, project proponents, and other interested parties, in evaluating potential air quality impacts of projects in the Air Basin. The CEQA Air Quality Handbook provides standards, methodologies, and procedures for conducting air quality analysis and was used extensively in the preparation of this analysis. SCAQMD is currently in the process of replacing the CEQA Air Quality Handbook with the Air Quality Analysis Guidance Handbook.

In order to assist the CEQA practitioner in conducting an air quality analysis in the interim while the replacement Air Quality Analysis Guidance Handbook is being prepared, supplemental guidance/information is provided on the SCAQMD website and includes: 1) EMFAC on-road vehicles emission factors; 2) background CO concentrations; 3) localized significance thresholds (LSTs); 4) mitigation measures and control efficiencies; 5) mobile source toxics analysis; 6) off-road mobile source emission factors; and 7) updated SCAQMD Air Quality Significance Thresholds. SCAQMD also recommends using approved models to calculate emission from land use projects, such as the CalEEMod. These recommendations were followed in the preparation of this analysis.

6.1.1 Regional Emissions

The project's "regional" emission refers to emissions that will be evaluated based on regional significance thresholds established by SCAQMD, as discussed above. Daily regional emissions during construction are estimated by assuming a conservative construction schedule and applying the multiple source and fugitive dust emission factors derived from the SCAQMD-recommended CalEEMod latest version. Details of the modeling assumptions and emission factors are provided in Appendix A. The calculations of the emissions generated during project construction activities reflect the types and quantities of construction equipment that would be used to remove existing structures, grade and excavate the project site, construct the proposed buildings and related improvements, and plant new landscaping within the site.

6.1.2 Localized Emissions

The localized effects from the on-site portion of the daily emissions were evaluated and sensitive receptor locations potentially impacted by the project according to SCAQMD LST methodology, which uses on-site mass emission rate lookup tables and project-specific modeling, where appropriate. SCAQMD provides LSTs applicable to the following criteria pollutants: NO_x, CO, PM_{10}, and $PM_{2.5}$. SCAQMD does not provide an LST for SO_2 since land use development projects typically result in negligible construction and long-term operation emissions of this pollutant. Since VOCs are not a criteria pollutant, there are no ambient standard or SCAQMD LSTs for VOCs. Due to the role VOCs play in O_3 formation, it is classified as a precursor, and only a regional emissions threshold has been established.

LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard and/or were developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor. The mass rate lookup tables were developed for each source receptor area and can be used to determine whether or not a project may generate significant adverse localized air quality impacts. SCAQMD provides LST mass rate lookup tables for projects with active construction areas that are less than or equal to 5 acres. For projects that exceed 5 acres—such as this project, which involves a 13-acre project site—the 5-acre LST lookup values can be used as a screening tool to determine which pollutants require detailed analysis. This approach is conservative as it assumes that all on-site emissions would occur within a 5-acre area and would over-predict potential localized impacts (i.e., more pollutant emissions occur within a smaller area, resulting in greater concentrations). If the project exceeds the LST lookup values, then SCAQMD recommends that project-specific air quality modeling must be performed to determine if the project's local emissions exceed applicable significance thresholds.

6.1.3 Construction Assumptions

Construction emissions associated with the project, including emissions associated with the operation of off-road equipment, haul-truck trips, on-road worker vehicle trips, vehicle travel on paved and unpaved surfaces, and fugitive dust from material handling activities, were calculated using CalEEMod version 2022.1.1.17 (CAPCOA 2022). CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with both construction and operation of a variety of land use projects. The model uses widely accepted federal and state models for emission estimates and default data from sources such as EPA AP-42 emission factors, CARB vehicle emission models, and studies from California agencies such as CEC. The model quantifies direct emissions from construction and operations, as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. The model was developed in collaboration with the air districts in California. Default data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) have been provided by the various California air districts to account for local requirements and conditions.

Emissions modeling included emissions generated during the following project phases: 1) demolition and site preparation of the project site; 2) installation of infrastructure improvements; 3) development of the proposed new museum building and parking lot; 4) landscaping and hydroseeding; and 5) on-site roadway improvements. These project phases have been grouped into six phases in CalEEMod based on the types of equipment and workload: 1) demolition; 2) site preparation; 3) grading; 4) building construction; 5) paving; and 6) architectural coating.

The 13-acre project site has been divided into the following land uses for purposes of CalEEMod: 1) parking (1.86 acres); 2) other non-asphalt surfaces (3.21 acres); 3) educational-library (64,000 square feet [1.47 acres], 40,000 square feet [0.92 acre], and 2,000 square feet [0.05 acre]); and 4) recreational city park (6 acres).

Modeling input data were based on this anticipated construction schedule and phasing. Construction equipment and usage required for each phase were obtained using CalEEMod defaults for the land use types which make up the project site, information provided by the Foundation, and default parameters contained in the model for the project site (Los Angeles County South Coast). The construction duration is assumed to be approximately 4 years. Project construction would consist of different activities undertaken in phases, through to the operation of the project. Typical construction equipment would be used during all phases of project construction and would be stored within the staging area, potentially including excavators, dozers, backhoes, dump trucks, water trucks, jackhammers, sand blasters, rollers, pavers, generators, scrapers, forklifts, delivery trucks, paving equipment, cranes, and air compressors. There is no blasting anticipated during construction. Construction assumes 53,000 cubic yards of cut/export and 37,000 cubic yards of imported fill, occurring during the grading and building construction phases. Table 7 shows the project's anticipated construction schedule, presents an estimate of the maximum number of pieces of equipment for each construction phase, and conservatively assumes equipment would be operating 8 hours per day, 6 days per week for the construction phase duration.

Table 7. Construction Anticipated Schedule, Trips, and Equipment

Phase (Duration)	Equipment Used			Daily Vehicle Trips
	Type	Number	Hours per Day	
Demolition	Rubber-tired dozer	2	8	50 worker one-way trips 8 vendor one-way trips 4 haul one-way trips
(262 working days)	Excavator	3	7	
1/1/2024 – 10/31/2024 Approximately 102,000 square feet demolished	Concrete/Industrial saw	1	8	
Site Preparation	Rubber-tired dozers	3	7	20 worker one-way trips
(262 working days)	Tractors/Loaders/Backhoe	4	7	
1/1/2024 – 10/31/2024				
Grading	Graders	1	8	75 worker one-way trips 10 vendor one-way trips 107 haul one-way trips
(52 working days)	Excavators	2	8	
11/1/2024 – 12/31/2024	Tractors/Loaders/Backhoe	2	8	
	Scrapers	2	8	
	Rubber-tired dozers	1	8	
Building Construction	Forklifts	3	7	200 worker one-way trips 17 vendor one-way trips 7 haul one-way trips
(808 working days)	Generator sets	1	8	
1/25/2025 – 7/31/2027	Cranes	1	8	
	Welders	1	8	
	Tractors/Loaders/Backhoe	3	8	
Paving	Pavers	2	7	15 worker one-way trips
(184 working days)	Paving equipment	2	7	
6/1/2027 – 12/31/2027	Rollers	2	8	
Architectural Coating	Air compressor	1	6	20 worker one-way trips
(79 working days)				
7/1/2026 – 9/30/2026				

Notes: For the parameters that are not provided in the table (e.g., equipment horsepower and load factor, on-road trip lengths), CalEEMod defaults were used.

The construction particulate matter emissions were mitigated in the CalEEMod model to comply with the above SCAQMD measures discussed in Section 4.3 of this report. During construction, exposed areas and active demolition sites would be watered two times per day, and travel on unpaved roads or surfaces by workers, vendors, or haul trucks would be limited to a speed limit of 25 miles per hour. As an additional mitigation measure, all off-road equipment over 75 horsepower would be Tier 4 Interim (see Section 7.2), which differs from the CalEEMod average default.

6.2 Operational Emissions

6.2.1 Regional Emissions

Criteria pollutant and GHG emissions from the operational phase of the project were estimated using CalEEMod Version 2022.1.1.17 (CAPCOA 2022). Year 2028 was assumed as the first full year of operations after completion of construction. The operational emissions were calculated based on CalEEMod defaults associated with the project's land use types. Analysis of the project's likely impact on regional air quality during project operation takes into consideration five types of sources: 1) area, 2) energy, 3) mobile, 4) off-road, and 5) stationary.

6.2.1.1 AREA SOURCES

CalEEMod was used to estimate operational emissions from area sources, including emissions from consumer product use, architectural coatings, and landscape maintenance equipment. Emissions associated with natural gas usage in space heating, water heating, and stoves are calculated as part of building energy use in CalEEMod. The project would not include woodstoves or fireplaces (wood or natural gas). Therefore, area source emissions associated with hearths were not included.

Consumer products are chemically formulated products used by household and institutional consumers, including detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products. Other paint products, furniture coatings, or architectural coatings are not considered consumer products (CAPCOA 2022). Consumer product VOC emissions are estimated in CalEEMod based on the floor area of residential and nonresidential buildings and on the default factor of pounds of VOC per building square foot per day. For parking lot land uses, CalEEMod estimates VOC emissions associated with use of parking surface degreasers based on a square footage of parking surface area and pounds of VOC per square foot per day.

VOC off-gassing emissions result from evaporation of solvents contained in surface coatings, such as in paints and primers using during building maintenance. CalEEMod calculates the VOC evaporative emissions from application of residential and nonresidential surface coatings based on the VOC emission factor, the building square footage, the assumed fraction of surface area, and the reapplication rate. The VOC emission factor is based on the VOC content of the surface coatings, and SCAQMD's Rule 1113 (Architectural Coatings) governs the VOC content for interior and exterior coatings. The model default reapplication rate of 10% of area per year is assumed. Architectural coating for the parking surface area was also estimated with CalEEMod defaults.

Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chainsaws, and hedge trimmers. The emissions associated with landscape equipment use are estimated based on CalEEMod default values for emission factors (grams per square foot of nonresidential building space per day) and number of summer days (when landscape maintenance would generally be performed) and winter days. For Los Angeles County, the average annual "summer" days are estimated to 365 days; however, it is assumed that landscaping equipment would likely only operate during the week (not weekends), so operational days were assumed to be 250 days per year in CalEEMod. Emissions associated with potential landscape maintenance equipment were included and no emission reduction features related to electric landscape equipment were assumed, to conservatively capture potential project operational emission sources.

6.2.1.2 ENERGY SOURCES

As represented in CalEEMod, energy sources include emissions associated with building electricity and natural gas usage (non-hearth). Electricity use would contribute indirectly to criteria air pollutant emissions; however, the emissions from electricity use are only quantified for GHGs in CalEEMod, since criteria pollutant emissions occur at the site of the power plant, which is typically off-site.

6.2.1.3 MOBILE SOURCES

The project would generate criteria pollutant emissions from mobile sources (vehicular traffic) as a result of project operations. Emissions from mobile sources during operation of the project were estimated using CalEEMod default trip rates, trip lengths, fleet mix, and emissions factors for each vehicle.

6.2.1.4 OFF-ROAD AND STATIONARY SOURCES

Three emergency generators and one forklift are included as part of the project operations and are calculated using CalEEMod defaults and estimated operating hours per year.

6.2.2 Localized Emissions

Localized impacts from project operations include calculation of on-site emission using SCAQMD's recommended CalEEMod and evaluation of these emissions consistent with SCAQMD's LST methodology (discussed above).

6.3 Greenhouse Gas

This analysis quantifies the project's total annual GHG emissions from construction and operation, taking into account the GHG emission reduction measures that would be incorporated into the project's design. However, given the lack of a formally adopted numerical significance threshold or a formally adopted local plan for reducing GHG emission applicable to this project, this analysis evaluates the significance of the project's GHG emission by assessing the project's consistency with regulatory schemes and policies that are designed to reduce GHG emission by encouraging development located and designed to result in the efficient use of resources.

While project design features would reduce project-related GHG emissions, not all measures are accounted for in the project's emissions inventory. Certain measures may not be accurately quantified or insufficient data are available to determine the reduction in GHG emissions.

The following project design features and mitigation measures are proposed with regard to GHG operation emissions:

- Incorporate energy-saving technologies and components to reduce the project's electrical use profile.
- Incorporate water-saving technologies and components to reduce the project's water/electrical use profile.
- Implement a Transportation Demand Management program, developed in consultation with Los Angeles Department of Transportation (LADOT).

6.4 Toxic Air Contaminants Impacts (Construction and Operations)

SCAQMD has also adopted land use planning guidelines in the *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning* (SCAQMD 2005), which considers impacts to sensitive receptors from facilities that emit TAC emissions. SCAQMD siting distance recommendations are the same as those provided by CARB. SCAQMD's document introduces land use–related policies that rely on design and distance parameters to minimize emissions and lower potential health risk. SCAQMD guidelines are voluntary initiatives recommended for consideration by local planning agencies.

Potential TAC impacts are evaluated by conducting a qualitative analysis consistent with the CARB Handbook (2005) followed by a more detailed analysis (i.e., dispersion modeling), as necessary. The qualitative analysis consists of reviewing the project to identify any new or modified TAC emission sources. If the qualitative evaluation does not rule out significant impacts from a new source, or modification of an existing TAC emissions source, a more detailed analysis is conducted. For the detailed analysis, sensitive receptor's locations are identified, and site-specific dispersion modeling is conducted to estimate project impacts.

Although the proposed development area of the project site is greater than 5 acres (estimated to be 13 acres), using the *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds* (SCAQMD 2011), the project would disturb less than 5 acres in 1 day. The LST lookup tables were used for project construction and operation and determined no significant impacts. However, due to the project acreage and the potential modification of the TAC (DPM) emitted on-site and off-site from on-road and off-road vehicles, health risk assessments were conducted for both construction and operations DPM; these are discussed in more detail below.

6.4.1 Construction Health Risk Assessment

An HRA was performed to evaluate potential health risks associated with construction of the project. The following discussion summarizes the dispersion modeling and HRA methodology; supporting construction HRA documentation, including detailed assumptions, is presented in Appendix B. For risk assessment purposes, PM_{10} in diesel exhaust is considered DPM, originating mainly from off-road equipment operating at a defined location for a given length of time at a given distance from sensitive receptors. Less-intensive, more-dispersed emissions result from on-road vehicle exhaust (e.g., heavy-duty diesel trucks). For the construction HRA, the CalEEMod scenario for the project was adjusted to reduce diesel truck one-way trip distances to approximately 1,760 feet, to estimate emissions from truck pass-by at proximate receptors.

The air dispersion modeling methodology was based on SCAQMD's generally accepted modeling practices (SCAQMD 2006). Air dispersion modeling was performed using the EPA's American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) Version 21112 modeling system (computer software) with the Lakes Environmental Software implementation/user interface, AERMOD View Version 10.2.1. The HRA followed the Office of Environmental Health Hazard Assessment 2015 guidelines (OEHHA 2015) and SCAQMD guidance to calculate the health risk impacts at all proximate receptors, as further discussed below. The dispersion modeling included the use of standard regulatory default options. AERMOD parameters were selected consistent with the SCAQMD and EPA guidance and identified as representative of the project site and project activities.

Cancer risk is defined as the increase in probability (chance) of an individual developing cancer due to exposure to a carcinogenic compound, typically expressed as the increased chances in 1 million. Maximum Individual Cancer Risk is the estimated probability of a maximally exposed individual potentially contracting cancer because of exposure to TACs over a period of 30 years for residential receptor locations. For the construction HRA, the TAC exposure period was assumed to be from third trimester to 4 years for all receptor locations (i.e., the assumed duration of project construction). The exposure pathway for DPM is inhalation only.

The SCAQMD has also established noncarcinogenic risk parameters for use in HRAs, since some TACs increase noncancer health risk due to long-term (chronic) exposures and some TACs increase noncancer health risk due to short-term (acute) exposures. No short-term, acute relative exposure level has been established for DPM; therefore, acute impacts of DPM are not addressed in the HRA. Chronic exposure is evaluated in the construction HRA. Noncarcinogenic risks are quantified by calculating a hazard index, expressed as the ratio between the ambient pollutant concentration and its toxicity or Reference Exposure Level which is a concentration at or below which health effects are not likely to occur. The chronic hazard index is the sum of the individual substance chronic hazard indices for all TACs affecting the same target organ system. A hazard index of less than one (1.0) means that adverse health effects are not expected.

6.4.2 Operational Health Risk Assessment

An HRA was performed to evaluate potential health risk associated with operation of the project, specifically from trucks traveling to and from the project site and off-road or stationary equipment within the project site. The following discussion summarizes the dispersion modeling and HRA methodology; supporting operational HRA documentation, including detailed assumptions, is presented in Appendix B. For risk assessment purposes, PM_{10} in diesel exhaust is considered DPM, originating mainly from diesel trucks traveling off-site, and on-site off-road and stationary equipment.

Like the construction scenario, air dispersion modeling methodology was based on SCAQMD's generally accepted modeling practices (SCAQMD 2018). Air dispersion modeling was performed using the EPA's AERMOD Version 21112 modeling system (computer software) with the Lakes Environmental Software implementation/user interface, AERMOD View Version 10.2.1. The HRA followed OEHHA 2015 guidelines (OEHHA 2015) and SCAQMD guidance to calculate the health risk impacts at all proximate receptors, as further discussed below. The dispersion modeling included the use of standard regulatory default options. AERMOD parameters were selected consistent with the SCAQMD and EPA guidance and identified as representative of the project site and project activities. The ground-level concentration plot files were used to estimate the long-term cancer health risk to an individual, and the noncancer chronic health indices.

Cancer risk is defined as the increase in probability (chance) of an individual developing cancer due to exposure to a carcinogenic compound, typically expressed as the increased chances in 1 million. Maximum Individual Cancer Risk is the estimated probability of a maximally exposed individual potentially contracting cancer as a result of exposure to TACs over a period of 30 years, operational lifetime, for residential receptor locations. For the operational HRA, the TAC exposure period was assumed to be from third trimester to 30 years for all receptor locations. The mandatory exposure pathways were selected.

The SCAQMD has also established noncarcinogenic risk parameters for use in HRAs, since some TACs increase noncancer health risk due to long-term (chronic) exposures and some TACs increase noncancer health risk due to short-term (acute) exposures; however, no short-term, acute relative exposure values are established and regulated for DPM and therefore are not addressed in this assessment. Noncarcinogenic risks are quantified by calculating a hazard index, expressed as the ratio between the ambient pollutant concentration and its toxicity or Reference Exposure Level, which is a concentration at or below which health effects are not likely to occur. The chronic hazard index is the sum of the individual substance chronic hazard indices for all TACs affecting the same target organ system. A hazard index of less than one (1.0) means that adverse health effects are not expected.

If the cancer risk from project operation at the maximally exposed individual resident exceeds 1 in 1 million, cancer burden, for which a SCAQMD significance threshold of 0.5, is evaluated. Unlike cancer risk, which is the lifetime probability (chances) of an individual developing cancer due to exposure to a carcinogenic compound, cancer burden estimates the number of theoretical cancer cases in a defined population resulting from a lifetime exposure to carcinogenic TACs. As described in the OEHHA guidance manual: The cancer burden can be calculated by multiplying the cancer risk at a census block centroid by the number of people who live in the census block, and adding up the estimated number of potential cancer cases across the zone of impact. The result of this calculation is a single number that is intended to estimate of the number of potential cancer cases within the population that was exposed to the emissions for a lifetime (70 years) (OEHHA 2015).

7 IMPACT ANALYSIS

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations.

Impact AQ-1 Would the project conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact with Mitigation. Section 15125 of the State CEQA Guidelines requires analysis of the project's consistency with the applicable government plans and policies. In accordance with the SCAQMD's CEQA Air Quality Handbook, the following criteria were used to evaluate the project's consistency with SCAQMD and SCAG regional plans and policies, including the AQMP:

- Will the project result in any of the following:
  - an increase in the frequency or severity of existing air quality violations;
  - cause or contribute to new air quality violations; or
  - delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP?
- Will the project exceed the assumptions used in preparing the AQMP?
  - Is the project consistent with the population and employment growth projections upon which AQMP forecasted emission levels are based; or
  - does the project include air quality mitigation measures; or
  - to what extent is project development consistent with the AQMP land use policies?

AQMP Air Quality Standards

With respect to the first criterion, localized concentrations of NO_2 as NO_X, CO, PM_{10}, and $PM_{2.5}$ have been analyzed for the project and are discussed further below. SO_2 emissions would be far below the SCAQMD daily significance thresholds during construction and long-term operations (see Impact AQ-2), and therefore would not have the potential to cause or contribute to a violation of the SO_2 ambient air quality standard. Because VOCs are not a criteria air pollutant, there is no ambient standard or localized threshold for VOCs. Because of the role VOCs play in O_3 formation, it is classified as a precursor pollutant and only a regional emissions threshold has been established.

Particulate matter is the primary pollutant of concern during construction activities, and therefore, the project's PM_{10} and $PM_{2.5}$ emissions during construction were analyzed: 1) to ascertain potential effects on localized concentrations; and 2) to determine if there is a potential for such emissions to cause or contribute to a violation of the ambient air quality standards for PM_{10} and $PM_{2.5}$.

Additionally, the project's maximum potential NO_X and CO daily emissions during construction and operations were analyzed to determine if there is a potential for project emissions to cause or contribute to a violation of an applicable ambient air quality standard. As shown in Table 8, Table 9, and Table 10, the analyzed pollutants would not exceed the regional SCAQMD thresholds of significance during construction or operation. As shown in Table 11 and Table 12, the analyzed pollutants would not exceed the localized SCAQMD-recommended LSTs during construction or operations. Therefore, project construction and operations would not result in a significant impact with regard to inconsistency with the applicable air quality plan regarding localized air quality. The project would not increase the frequency or severity of an existing violation or cause or contribute to new violations for any pollutants. As the project would not exceed any of the state and federal standards, the project would also not delay timely attainment of air quality standards or interim emission reductions specified in the AQMP.

Because the project would not introduce any substantial stationary sources of emissions, CO is the preferred benchmark pollutant for assessing local area air quality impacts from post-construction motor vehicle operations. As indicated above, no intersections would require a CO hot spot analysis, and impacts would be less than significant. Therefore, the project would not increase the frequency or severity of an existing CO violation or cause or contribute to new CO violations.

AQMP Assumptions

With respect to the second criterion for determining consistency with SCAQMD and SCAG air quality policies, the projections in the AQMP for achieving air quality goals are based on the assumptions in SCAG's 2020-2045 RTP/SCS regarding population, housing, and growth trends. Thus, the SCAQMD's second criterion for determining project consistency focuses on whether or not the project exceeds the assumptions used in preparing the forecast presented in the AQMD. Determining whether or not a project exceeds the assumptions reflected in the AQMP involves the evaluation of three criteria: 1) consistency with applicable population, housing, and employment growth projections; 2) project mitigation measures; and 3) appropriate incorporation of AQMP land use planning strategies. The following discussion provides an analysis with respect to each of these criteria. A project is consistent with AQMP, in part, if it is consistent with the population, housing, and employment assumptions that were used in the development of the AQMP. In the case of the 2016 AQMP, three sources of data form the basis for the projections of the air pollutant emissions: the County General Plan, the City General Plan, and SCAG's Regional Transportation Plan (RTP). The County General Plan represents a comprehensive update intended to reflect changing demographics, growth, and infrastructure conditions in the county and was adopted by the County Board of Supervisors on October 6, 2015. The plan serves as a comprehensive, long-term plan for future city development and was originally adopted in 1974. In April 2016, SCAG adopted the 2016-2040 RTP/SCS, which is included in the 2016 AQMP. This provides socioeconomic forecast projections of regional population growth. The population, housing, and employment forecast, which are adopted by SCAG's Regional Council, are based on the local plans and policies applicable to the specific region; these are used by SCAG in all phases of implementation and review.

The project would not directly contribute to population growth in the vicinity of the project as the project does not include new housing. In addition, the project is not expected to create a significant increase in the number of employees as the improvements to the project that would be implemented are not anticipated to increase the average amount of programming, hours, or the daily or annual attendance levels that have been experienced at La Brea Tar Pits. Projected levels of project employees and visitors are consistent with the population and employment forecast for the subregion as adopted by SCAG.

Because these same projections form the basis of the 2016 AQMP, it could be concluded that the project would be consistent with the population and employment growth projections of the AQMP.

The project would incorporate a number of key control measures identified by the SCAQMD, as summarized below. As such, the project meets this AQMP consistency criteria since all feasible mitigation measures would be implemented.

With regard to land use developments, such as the project, air quality policies in the AQMP focus on the reduction of vehicle trips and vehicle miles traveled (VMT). The project would serve to implement a number of land use policies of the County of Los Angeles, the City of Los Angeles, SCAQMD, and SCAG. The project is based on principles of smart growth and environmental sustainability, as evidenced by the accessibility of public transport transit and the availability of existing and planned infrastructure to service the proposed uses.

The project includes various characteristics that minimize VMT and vehicle trips to the project site, including providing a diversity and mix of uses on the project site and within the “Miracle Mile” area, which would minimize vehicle trips and VMT by encouraging walking and non-automotive forms of transportation, and improved design including developing ground-floor museum uses and improved streetscape, which would enhance walkability in the project vicinity, among other project characteristics. To reduce project employee and visitor vehicle trips and increase alternative modes such as walking, bicycling, public transit, and rideshare, the project shall prepare and implement a Transportation Demand Management program, which will be developed in consultation with LADOT. Because the project implements the County of Los Angeles, City of Los Angeles, and SCAQMD objectives of minimizing VMT and the related vehicular air emissions, the project is consistent with AQMP land use policies.

In conclusion, the determination of AQMP consistency is primarily associated with the long-term influence of the project on the air quality in the Air Basin. While development of the project would result in short-term regional impacts for the months of demolition, site preparation, and grading during construction of the project, project development would not have a significant long-term impact on the region’s ability to meet state and federal air quality standards. The project would comply with SCAQMD Rule 403 and would implement all feasible mitigation measures. The project would also be consistent with the goals and policies of the AQMP for control of fugitive dust. As discussed above, the project’s long-term influence would be consistent with the goals and policies of the AQMP and is, therefore, considered consistent with the SCAQMD’s AQMP.

Impact AQ-2 Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less Than Significant Impact with Mitigation. A quantitative analysis was conducted to determine whether proposed activities might result in emissions of criteria air pollutants that may cause exceedances of the NAAQS or CAAQS, or cumulatively contribute to existing nonattainment of ambient air quality standards. As previously discussed, criteria air pollutants include O_3, NO_2, CO, SO_2, PM_{10} (coarse particulate matter), $PM_{2.5}$ (fine particulate matter), and lead. Pollutants that are evaluated herein include VOCs and NO_x, which are important because they are precursors to O_3, as well as CO, SO_x, PM_{10}, and $PM_{2.5}$.

The Air Basin is designated as a nonattainment area for federal O_3 and $PM_{2.5}$ standards and the rolling 3-month average lead standard. It is designated as a nonattainment area for state O_3, PM_{10}, and $PM_{2.5}$ standards (CARB 2017b; EPA 2022b). The Air Basin is designated as attainment or unclassified for all other federal and state pollutants.

Construction

Construction of the project would result in the temporary addition of pollutants to the local airshed caused by on-site sources (e.g., off-road construction equipment, soil disturbance, VOC off-gassing from asphalt pavement application) and off-site sources (e.g., vendor trucks, haul trucks, and worker vehicle trips). Specifically, entrained dust results from the exposure of earth surfaces to wind from the direct disturbance and movement of soil, resulting in PM_{10} and $PM_{2.5}$ emissions. Internal combustion engines used by construction equipment, haul trucks, vendor trucks (i.e., delivery trucks), and worker vehicles would result in emissions of VOCs, NO_x, CO, PM_{10}, and $PM_{2.5}$. Construction emissions can vary substantially from day to day depending on the level of activity; the specific type of operation; and, for dust, the prevailing weather conditions.

The project would be required to comply with SCAQMD Rule 403 (SCAQMD 2015) to control dust emissions generated during any dust-generating activities. Standard construction practices that would be employed to reduce fugitive dust emissions include watering of the active dust areas up to three times per day, depending on weather conditions, using water to control dust emissions during demolition activities, washing vehicle wheels before they leave the site, etc. For purposes of estimating project emissions, and based on information provided by the Foundation, it is assumed that construction of the project would last approximately 4 years. Table 8 presents the estimated unmitigated maximum daily construction emissions generated during construction of the project in comparison to the applicable SCAQMD regional significance thresholds. The values shown are the maximum daily emissions results from CalEEMod. Details of the emission calculations are provided in Appendix A.

Table 8. Unmitigated Daily Construction Emissions Summary

Construction Year	Unmitigated Construction Emissions Summary					
	ROG	NOx	CO	PM_{10}	$PM_{2.5}$	SO_2
	Pollutant Emission (pounds per day)					
2024	6.10	57.1	55.8	24.0	11.7	0.08
2025	2.07	13.1	28.2	4.83	1.26	0.03
2026	9.51	13.6	29.9	6.54	1.45	0.03
2027	2.55	17.9	35.8	6.66	1.60	0.04
Peak daily emission	*9.51*	*57.1*	*55.8*	*24.0*	*11.7*	*0.08*
SCAQMD Regional significance thresholds	*75*	*100*	*550*	*150*	*55*	*150*
Threshold exceeded?	*No*	*No*	*No*	*No*	*No*	*No*

Note: ROG = reactive organic gases. Emissions were quantified using CalEEMod version 2022.1.1.17 (CAPCOA 2022).
Summer model results are presented above. Model results (summer, winter, and annual) and assumptions are provided in Appendix A.

As Table 8 shows, estimated unmitigated construction emissions for all pollutants are below SCAQMD regional significance thresholds. Table 9 shows the estimated mitigated emissions with the application of mitigation measures which comply with the standard mitigation measures for fugitive dust control regarding on-site and off-site unpaved roads and all unpaved traffic areas. In CalEEMod, the following mitigation measures were included to reflect these standard mitigation measures for fugitive dust control: reduce speed on unpaved roads to 25 miles per hour, and water exposed areas and active demolition areas two times per day; as well as the Tier 4 Interim mitigation for all off-road equipment greater than 75 horsepower.

Table 9. Mitigated Construction Emissions Summary

Construction Year	Mitigated Construction Emissions Summary					
	ROG	NOx	CO	PM10	PM2.5	SO2
	Pollutant Emission (pounds per day)					
2024	1.66	24.4	48.3	9.01	4.07	0.08
2025	1.47	11.8	30.4	3.39	0.85	0.03
2026	8.96	12.8	32.2	4.05	0.97	0.03
2027	1.76	17.4	38.6	4.02	0.99	0.04
Peak daily emission	*8.96*	*24.4*	*48.3*	*8.98*	*4.07*	*0.08*
SCAQMD significance thresholds	*75*	*100*	*550*	*150*	*55*	*150*
Threshold exceeded?	*No*	*No*	*No*	*No*	*No*	*No*

Note: ROG = reactive organic gases. Emissions were quantified using CalEEMod, version 2022.1.1.17 (CAPCOA 2022).

Summer model results are presented above for daily emissions. Model results (summer, winter, and annual) and assumptions are provided in Appendix A.

As shown in Table 9, daily construction emissions would not exceed the SCAQMD significance thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$ during construction. Construction-generated emissions would be temporary and would not represent a long-term source of criteria air pollutant emissions. Therefore, impacts would be less than significant.

Operations

Project operations would generate VOCs, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions from mobile sources, including vehicle trips; area sources, including the use of consumer products, architectural coatings for repainting, and landscape maintenance equipment; water, waste, off-road, and stationary sources; and energy sources, including combustion of fuels used for space and water heating. Table 10 presents the maximum daily emissions associated with operation of the project in 2028 at buildout. The values shown are the maximum summer daily emissions results from CalEEMod for each source type. Complete details of the emissions calculations are provided in Appendix A. As shown in Table 10, maximum daily operational emissions of VOCs, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ generated by the project would not exceed the SCAQMD's significance thresholds.

As previously discussed, the Air Basin has been designated as a federal nonattainment area for O_3 and $PM_{2.5}$, and a state nonattainment area for O_3, PM_{10}, and $PM_{2.5}$. The nonattainment status is the result of cumulative emissions from various sources of air pollutants and their precursors within the Air Basin, including motor vehicles, off-road equipment, and commercial and industrial facilities. Construction and operational activities of the project would generate VOCs and NO_x emissions (precursors to O_3) and emissions of PM_{10} and $PM_{2.5}$. However, as indicated in Table 9 and Table 10, project-generated emissions would not exceed the SCAQMD regional emission-based significance thresholds for VOCs, NO_x, PM_{10}, or $PM_{2.5}$.

Table 10. Unmitigated Daily Operational Emissions Summary

Operations Source Type	Unmitigated Operations Emissions Summary					
	ROG	NOx	CO	PM10	PM2.5	SO2
	Pollutant Emission (pounds per day)					
Mobile	4.98	3.17	37.0	8.40	2.17	0.09
Area	2.59	0.04	4.61	0.01	0.01	<0.005
Energy	0.17	3.02	2.54	0.23	0.23	0.02
Off-road	0.03	0.29	0.52	0.01	0.01	<0.005
Stationary	0.84	2.73	3.04	0.12	0.12	<0.005
Total	***8.61***	***9.25***	***47.71***	***8.77***	***2.54***	***0.13***
SCAQMD Regional operational significance thresholds	*55*	*55*	*550*	*150*	*55*	*150*
Threshold exceeded?	*No*	*No*	*No*	*No*	*No*	*No*

Note: ROG = reactive organic gases. CalEEMod emissions were quantified using CalEEMod, version 2022.1.1.17 (CAPCOA 2022).

Summer model results are presented above for daily emissions. Model results (summer, winter, and annual) and assumptions are provided in Appendix A.

The values for each operational source type shown are the maximum summer daily emissions results from the CalEEMod output, assuming operational year 2028. The total values may not sum exactly due to rounding.

Cumulative localized impacts would potentially occur if a project were to occur concurrently with another off-site project. Schedules for potential future projects near the project site are currently unknown; therefore, potential impacts associated with two or more simultaneous projects would be considered speculative. However, future projects would be subject to CEQA and would require air quality analysis and, where necessary, mitigation. Criteria air pollutant emissions associated with construction activity of future projects would be reduced through implementation of control measures required by the SCAQMD. Cumulative PM_{10} and $PM_{2.5}$ emissions would be reduced because all future projects would be subject to SCAQMD Rule 403 (Fugitive Dust), which sets forth general and specific requirements for all sites in the SCAQMD. In addition, cumulative VOC emissions would be subject to SCAQMD Rule 1113 (Architectural Coatings). Therefore, the project would not result in a cumulatively considerable increase in emissions of nonattainment pollutants, and impacts would be less than significant with mitigation during construction and operations.

In summary, the project would not result in a potentially significant contribution to regional concentrations of nonattainment pollutants and would not result in a significant contribution to the adverse health impacts associated with those pollutants. Therefore, impacts would be less than significant with mitigation.

Impact AQ-3 Would the project expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact with Mitigation. A localized significance threshold analysis was performed to evaluate localized air quality impacts to sensitive receptors in the immediate vicinity of the project as a result of project activities. The impacts were analyzed using methods consistent with those in the SCAQMD's *Final Localized Significance Threshold Methodology* (2008a). The project is located within SRA 1 (Central Los Angeles).

The greatest on-site daily emissions of NO_x, CO, PM_{10}, and $PM_{2.5}$ generated during construction occurred during the demolition and site preparation period of the project construction, when, based on information provided by the Foundation and CalEEMod defaults, it was assumed that five rubber-tired dozers and four tractor/loader/backhoes would be used. CalEEMod default values assume that during an 8-hour day, graders and rubber-tired dozers can each disturb a maximum of 0.5 acre/8-hour day. This results in 4.5 acres disturbed per day. The SCAQMD LST values for 5 acres within SRA 1 with a receptor distance of 25 meters (82 feet), which is consistent with the closest sensitive receptor being approximately 27 meters (87 feet) away, were compared to emissions from the project.

Project construction activities would result in temporary sources of on-site criteria air pollutant emissions associated with construction equipment exhaust and dust-generating activities. According to the Final Localized Significance Threshold Methodology, "off-site mobile emissions from the project should NOT be included in the emissions compared to the LSTs" (SCAQMD 2008a:1-4).

Trucks and worker trips associated with the project are not expected to cause substantial air quality impacts to sensitive receptors along off-site roadways, because emissions would be relatively brief in nature and would cease once the vehicles pass through the main streets. The project emissions below include the off-site mobile emissions and therefore are conservative. The maximum daily on-site construction emissions generated during construction of the project are presented in Table 11 and compared to the SCAQMD LSTs for SRA 1 to determine whether project-generated on-site construction emissions would result in potential LST impacts.

Table 11. Construction Localized Significance Thresholds Analysis

Year	NOx	CO	PM10	PM2.5
	Pounds per Day*			
2024	29.6	48.3	9.01	4.07
2025	12.0	30.4	3.39	0.85
2026	11.8	32.2	4.05	0.97
2027	11.7	38.6	4.02	0.99
SCAQMD construction LST criteria	*161*	*1,861*	*16*	*8*
Threshold exceeded?	*No*	*No*	*No*	*No*

Source: SCAQMD (2009)

* Localized significance thresholds are shown for a 5.0-acre disturbed area corresponding to a distance to a sensitive receptor of 25 meters in SRA 1. Conservatively includes on-site and off-site emissions.

As shown in Table 11, proposed construction activities would not generate emissions in excess of SRA-specific LSTs; therefore, project construction would not expose sensitive receptors to localized emissions concentrations in excess of SCAQMD standards.

The maximum daily on-site emissions generated during operation of the project are presented in Table 12 and compared to the SCAQMD operations localized significance criteria for SRA 1 to determine whether project-generated on-site operations emissions would result in potential LST impacts.

Table 12. Operational Localized Significance Thresholds Analysis

Year	NOx	CO	PM10	PM2.5
	Pounds per Day (On-site)*			
2028	6.04	6.08	0.37	0.37
SCAQMD operational LST criteria	*161*	*1,861*	*4*	*2*
Threshold exceeded?	*No*	*No*	*No*	*No*

Source: SCAQMD (2009)

* Localized significance thresholds are shown for a 5.0-acre disturbed area corresponding to a distance to a sensitive receptor of 25 meters in SRA 1.

As shown in Table 12, proposed operations would not generate emissions in excess of site-specific LSTs; therefore, project operation would not expose sensitive receptors to localized emissions concentrations in excess of SCAQMD standards.

Health Impacts of Toxic Air Contaminants

Construction Health Risk Assessment

As discussed in Section 6.4.1, a construction HRA was performed to estimate the Maximum Individual Cancer Risk and the Chronic Hazard Index for residential receptors as a result of project construction. Results of the construction HRA are presented in Table 13.

Table 13. Construction Health Risk Assessment Results – Unmitigated

Impact Parameter	Unit	Project Impact	CEQA Threshold	Level of Significance
Maximum Individual Cancer Risk – Residential	per million	78.07	10	**Potentially Significant**
Chronic Hazard Index – Residential	Index Value	0.08	1.0	Less than Significant

Source: SCAQMD (2019)
Note: See Appendix B for detailed results.

As shown in Table 13, the HRA results from the unmitigated scenario show that project construction would result in a Residential Chronic Hazard Index of 0.008, which is below the 1.0 significance threshold; however, project construction would result in cancer risks exceeding the 10 in 1 million threshold, resulting in a potentially significant impact at the maximally exposed individual residential receptors. Mitigation Measure AQ-1 (MM-AQ-1) has been identified to reduce project construction-generated DPM emissions to the extent feasible through requiring all 75 horsepower or greater diesel-powered equipment to be powered with CARB certified Tier 4 Interim engines, and all other diesel fueled equipment to use engines classified as Tier 3 or higher. The HRA results after incorporation of MM-AQ-1 are presented in Table 14.

Table 14. Construction Health Risk Assessment Results – Mitigated

Impact Parameter	Unit	Project Impact	CEQA Threshold	Level of Significance
Maximum Individual Cancer Risk – Residential	per million	8.95	10	Less than Significant
Chronic Hazard Index – Residential	Index Value	0.007	1.0	Less than Significant

Source: SCAQMD (2019)
Note: See Appendix B for detailed results.

As shown in Table 14, with the implementation of mitigation MM-AQ-1, the estimated cancer risk during project construction would be reduced below the SCAQMD threshold of 10 in 1 million. Therefore, potential impacts to sensitive receptors associated with construction of the project would be less than significant with mitigation.

Operational Health Risk Assessment

As discussed in Section 6.4.2, an operational HRA was performed to estimate the Maximum Individual Cancer Risk and the Chronic Hazard Index for residential receptors as a result of project operations, including truck trips and off-road/stationary equipment. Results of the operational HRA are presented in Table 15. The analysis was performed based on a 6-day per week operation. However, the actual operation is 5 days per week, therefore, the following analysis of operational HRA is considered conservative.

Table 15. Operational Health Risk Assessment Results – Unmitigated

Impact Parameter	Unit	Project Impact	CEQA Threshold	Level of Significance
Maximum Individual Cancer Risk – Residential	per million	7.81	10	Less than Significant
Chronic Hazard Index – Residential	Index Value	0.003	1.0	Less than Significant

Source: SCAQMD (2019)
Note: See Appendix B for detailed results.

As shown in Table 15, project operational activities would result in a Residential Maximum Individual Cancer Risk of 7.81 in 1 million, which would be less than the significance threshold of 10 in 1 million. Project operations would also result in a Residential Chronic Hazard Index of 0.003, which is below the 1.0 significance threshold. Thus, operational impacts associated with potential cancer risk would be less than significant.

Cancer Burden

As discussed above, a construction HRA was performed to estimate the Maximum Individual Cancer Risk and the Chronic Hazard Index for residential receptors as a result of project construction. Since the cancer risk from project operation at the maximally exposed individual resident exceeds 1 in 1 million, cancer burden, for which a SCAQMD significance threshold of 0.5, is evaluated. Unlike cancer risk, which is the lifetime probability (chances) of an individual developing cancer due to exposure to a carcinogenic compound, cancer burden estimates the number of theoretical cancer cases in a defined population resulting from a lifetime exposure to carcinogenic TACs. As described in the OEHHA guidance manual:

> The cancer burden can be calculated by multiplying the cancer risk at a census block centroid by the number of people who live in the census block, and adding up the estimated number of potential cancer cases across the zone of impact. The result of this calculation is a single number that is intended to estimate of the number of potential cancer cases within the population that was exposed to the emissions for a lifetime (70 years). (OEHHA 2015:8-16)

The SCAQMD has established a procedural screening approach for estimating cancer burden (SCAQMD 2017), which includes the following steps:

- Recalculate cancer risk from all TACs using a 70-year exposure duration.
- Estimate the distance at which the at which maximum individual cancer risk from a 70-year exposure duration falls below 1 in 1 million.
- Define a zone of impact in the shape of a circle, with the radius equal to the distance between the TAC source and the point at which the risk falls below 1 in 1 million.
- Estimate the residential population within this zone of impact based on census data or a worse-case estimate.
- Calculate the screening level cancer burden by multiplying the total residential population in the zone of impact by the maximum individual cancer risk.

The maximum estimated 70-year cancer risk for project operation was estimated at 8.95 in 1 million. The total population in the zone of impact area was estimated to be approximately 24,644 persons, based on the average densities of the Census Tracts that would be within the zone of impact (Census Tracts 2151.01, 2151.02, 2162.01, 2163.02, 2145.01, 2145.03, 2145.04, and 2147) (U.S. Census Bureau 2020).

Multiplying the maximum estimated 70-year cancer risk by the project population gives a cancer burden of 0.32. Accordingly, the cancer burden indicates that less than one person could contract cancer assuming a 70-year exposure under the modeled scenario of TAC emissions and provided that other factors related to an individual's susceptibility to contracting cancer would occur. An estimated cancer burden of 0.32 would be less than the SCAQMD cancer burden threshold of 0.5. Thus, the impact with respect to potential cancer burden due to project operations would be less than significant.

Local Carbon Monoxide Concentrations

At the time that the SCAQMD 1993 Handbook was published, the Air Basin was designated nonattainment under the CAAQS and NAAQS for CO. In 2007, the SCAQMD was designated in attainment for CO under both the CAAQS and NAAQS as a result of the steady decline in CO concentrations in the Air Basin due to turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities. The SCAQMD conducted CO modeling for the 2003 AQMP (Appendix V: Modeling and Attainment Demonstrations, SCAQMD 2003c) for the four worst-case intersections in the Air Basin: 1) Wilshire Boulevard and Veteran Avenue, 2) Sunset Boulevard and Highland Avenue, 3) La Cienega Boulevard and Century Boulevard, and 4) Long Beach Boulevard and Imperial Highway. At the time the 2003 AQMP was prepared, the intersection of Wilshire Boulevard and Veteran Avenue was the most congested intersection in Los Angeles County, with an average daily traffic volume of about 100,000 vehicles per day. Using CO emission factors for 2002, the peak modeled CO 1-hour concentration was estimated to be 4.6 ppm at the intersection of Wilshire Boulevard and Veteran Avenue. When added to the maximum 1-hour CO concentration from 2018 through 2020 at the North Main Street monitoring station (which was 2 ppm in 2019), the 1-hour CO concentration would be 6.6 ppm, while the CAAQS is 20 ppm.

The 2003 AQMP also projected 8-hour CO concentrations at these four intersections for 1997 and from 2002 through 2005. From years 2002 through 2005, the maximum 8-hour CO concentration was 3.8 ppm at the Sunset Boulevard and Highland Avenue intersection in 2002; the maximum 8-hour CO concentration was 3.4 ppm at the Wilshire Boulevard and Veteran Avenue in 2002. Adding the 3.8 ppm to the maximum 8-hour CO concentration from 2018 through 2020 at the North Main Street monitoring station (which was 1.7 ppm in 2018), the 8-hour CO would be 5.5 ppm, while the CAAQS is 9.0 ppm. Accordingly, CO concentrations at congested intersections would not exceed the 1-hour or 8-hour CO CAAQS unless projected daily traffic would be at least over 100,000 vehicles per day. Because the project would not increase daily traffic volumes at any study intersection to more than 100,000 vehicles per day as shown in the La Brea Tar Pits Master Plan Final Transportation Assessment (Kittelson & Associates, Inc. 2022), a CO hot spot is not anticipated to occur, and associated impacts would be less than significant.

Impact AQ-4 **Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?**

Less Than Significant Impact. According to the SCAQMD CEQA Air Quality Handbook, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The project does not include any uses identified by the SCAQMD as being associated with odors.

Construction activities associated with the project may generate detectable odors from heavy-duty equipment exhaust and architectural coatings. However, construction-related odors would only occur when construction is active and cease upon project completion. In addition, the project would be required to comply with 13 CCR 2449(d)(3) and 2485, which require minimizing construction equipment idling time by either shutting it off when not in use or by reducing the time of idling to no more than 5 minutes. This would further reduce the detectable odors from heavy-duty equipment exhaust. The project would also comply with the SCAQMD Regulation XI, Rule 1113 – Architectural Coating, which would minimize odor impacts from reactive organic gas emissions during architectural coating. The project site is not located in an area of naturally occurring asbestos and asbestos-containing materials are a potential due to a small amount of demolition. SCAQMD Rule 403 also contains measures that are required to be incorporated that would reduce emissions. Any impacts to existing adjacent land uses would be short term and are less than significant.

Operation of the project does not include any component with the potential to generate odorous emissions that could affect a substantial number of people. Therefore, there would be a less-than-significant impact from construction and operations.

Impact GHG-1 Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

Impact GHG-2 Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

Less than Significant Impact with Mitigation.

Construction Emissions

Construction of the project would result in GHG emissions, which are primarily associated with use of off-road construction equipment, on-road vendor trucks, and worker vehicles. The SCAQMD *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold* (2008b:309) recommends that, "construction emissions be amortized over a 30-year project lifetime, so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies." Thus, the total construction GHG emissions were calculated, amortized over 30 years, and added to the total operational emissions.

CalEEMod was used to calculate the annual GHG emissions based on the construction scenario described in Section 6.1. Construction of the project is anticipated last a total of approximately 4 years. On-site sources of GHG emissions include off-road equipment and off-site sources including vendor trucks and worker vehicles. Table 16 presents construction emissions for the project from on-site and off-site emission sources.

As shown in Table 16, the estimated total GHG emissions during construction would be approximately 3,962 $MTCO_2e$ over the construction period. Estimated project-generated construction emissions amortized over 30 years would be approximately 132 $MTCO_2e$ per year. As with project-generated construction criteria air pollutant emissions, GHG emissions generated during construction of the project would only occur when construction is active, lasting only for the duration of the construction period, and would not represent a long-term source of GHG emissions.

Table 16. Estimated Annual Construction Greenhouse Gas Emissions

Construction Year	CO_2	CH_4	N_2O	CO_2e
	Metric Tons per Year			
2024	1,495	0.06	0.05	1,513
2025	889	0.04	0.04	902
2026	895	0.04	0.04	908
2027	632	0.02	0.02	639
Total	**3,911**	**0.16**	**0.15**	**3,962**
		Amortized construction emissions		***132.07***

Source: Appendix A.

Due to the potential persistence of GHGs in the environment, impacts are based on annual emissions and, in accordance with draft SCAQMD methodology, construction-period impacts are not assessed for significance independent of operational-period impacts, which are discussed in the next section. The total Project GHG emissions include the estimated annual operational project-generated GHG emissions, as well as the construction GHG emissions which have been amortized over the estimated life of the project.

Operational Emissions

Operation of the project would generate GHG emissions through motor vehicle trips to and from the project site, landscape maintenance equipment operation, energy use (natural gas and generation of electricity consumed by the project), natural gas-fueled emergency generator maintenance and testing, solid waste disposal, off-road and stationary equipment, and generation of electricity associated with water supply, treatment, and distribution and wastewater treatment. CalEEMod was used to calculate the annual GHG emissions.

The estimated operational project-generated GHG emissions from area sources, energy usage, motor vehicles, off-road and stationary sources, solid waste generation, and water usage and wastewater generation are shown in Table 17.

Table 17. Estimated Annual Operational Greenhouse Gas Emissions

Operations Type	CO_2	CH_4	N_2O	CO_2e
	Metric Tons per Year			
Mobile	1,314	0.07	0.06	1,335
Area	2.15	< 0.005	< 0.005	2.16
Energy	940	0.08	< 0.005	943
Water	8.12	0.11	< 0.005	11.6
Waste	8.76	0.88	0.00	30.6
Refrigeration	0	0	0.00	0.07
Off-road	8.99	< 0.005	< 0.005	9.02
Stationary	19.4	< 0.005	< 0.005	19.5
Total	**2,301**	**1.13**	**0.07**	**2,351**
		Amortized construction emissions		*132.07*
		Total operational + amortized construction GHGs		***2,483.07***

Source: Appendix A

Note: These emissions reflect operational year 2028.

As shown in Table 17, estimated annual project-generated GHG emissions would be approximately 2,351 $MTCO_2e$ per year from project operations only. After summing the amortized project construction emissions, total GHGs generated by the project would be approximately 2,483 $MTCO_2e$ per year, which is less than the SCAQMD interim screening-level threshold of 3,000 $MTCO_2e$ per year.

As noted above, it is also important to ensure that the project provides a "fair share" contribution to achieve the State's carbon neutrality goal. Given the project plans have not been fully developed, it is not yet determined whether the project includes the installation of natural gas infrastructure and/or the use of natural gas–fired appliances. Further, while a commitment to electric vehicle charging stations has been made, the number of charging stations that would be installed is not known. For these reasons, the project could result in a *significant impact* to GHGs. However, with implementation of the mitigation measures provided in Section 7.2, impacts would be less than significant.

Consistency with Applicable Plans and Policies

As stated above, the GHG impact analysis uses two different significance thresholds: a quantitative threshold, and consistency with GHG reduction plan and policies. Impact GHG-1's quantification of the project's potential GHG emissions is supplemented below with Impact GHG-2's consistency analysis with GHG reduction plans and policies. In the absence of any final adopted quantitative threshold, the significance of the project's GHG emissions is evaluated consistent with State CEQA Guidelines Section 15064.4(b)(2) by considering whether the project complies with applicable plans, policies, regulations, and requirements adopted for the purpose of reducing the emission of GHGs.

CARB's Climate Change Scope Plan

The Climate Change Scoping Plan outlines a framework that relies on a broad array of GHG reduction actions, including direct regulations, alternative compliance mechanisms, incentives, voluntary actions, and market-based mechanisms, such as the cap-and-trade program. The Climate Change Scoping Plan builds off of a wide array of regulatory requirements that have been promulgated to reduce statewide GHG emissions, particularly from energy demand and mobile sources. While these regulatory requirements are not targeted at specific land use development projects, they would indirectly reduce a development project's GHG emissions. A discussion of these regulatory requirements that would reduce· the project's GHG emissions is provided below. As detailed below, the project would not conflict with the Climate Change Scoping Plan and the implementation of GHG reduction strategies.

California Renewable Portfolio Standard (RPS) Program SB 100 and SB 350

While this action does not directly apply to individual projects, the project complies with the RPS program inasmuch as its electricity is provided by LADWP, which, in compliance with the RPS program, is required to obtain 33% renewable power by 2020, and has committed to achieving 50% renewable power by 2025. Furthermore, per the updated requirements of SB 100 (2018), LADWP would be required to procure eligible renewable electricity for 44% of retail sales by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030, and should plan to achieve 100% eligible renewable energy resources and zero carbon resources by December 31, 2045. Thus, the project would be supplied with electricity via renewable sources at increasing rates over time, reducing the project's electricity-related GHG emissions. As required under SB 350, doubling of the energy efficiency savings from final end uses of retail customers by 2030 would primarily rely on the existing suite of building energy efficiency standards under CCR Title 24, Part 6 and utility-sponsored programs such as rebates for high-efficiency appliances, heating, ventilation, and air conditioning (HVAC) systems, and insulation. The project would comply with Title 24 Standards.

SB 1368/AB 398, CCR Title 20, Cap-And-Trade Program

The State's cap-and-trade Program reduces GHG emissions from major sources (deemed "covered entities") by setting a firm cap on statewide GHG emissions and employing market mechanisms to achieve emission reduction targets. While the cap-and-trade program does not directly apply to individual projects, the project would benefit from the program inasmuch as the project's electricity usage and mobile source emissions would be covered by the cap-and-trade program since LADWP and California fuel suppliers are covered entities, resulting in an indirect reduction of GHG emissions from the project's energy consumption and mobile source emissions.

Title 24 Building Energy Efficiency Standards, and the CALGreen Code

The project would meet or exceed the energy standards in the Title 24 Building Energy Efficiency Standards and the CALGreen Code, and would implement project design features, including solar photovoltaic panels on the roof of the project building to reduce the amount of electricity drawn from City utilities. Additionally, the project would provide sustainability features, such as rainwater collection leading to bioswales; a sloped green roof; rooftop solar photovoltaic panels; HVAC systems that would be sized and designed in compliance with the CALGreen Code to maximize energy efficiency caused by heat loss and heat gain; new and existing tree canopies to protect building walls from sun exposure and provide shade for the ground area; and the use of drought-tolerant landscaping to reduce water demand and avoid the use of pesticides. All of these features would reduce the project's outdoor and indoor water demand, which would reduce the project's GHG emissions associated with water conveyance and wastewater treatment. As stated previously, the 2008 Climate Change Scoping Plan notes that water use requires significant amounts of energy, comprising approximately one-fifth of statewide electricity.

AB 1493 (Pavley Regulations)

The State's Pavley Regulations apply to new passenger vehicles from model year 2012 through 2016 (Phase I) and model years 2017 through 2025 (Phase II). While this action does not apply to individual projects, future employees and visitors to the project site would purchase new vehicles in compliance with this regulation. Mobile source emissions generated by future visitors and employees would be reduced with implementation of AB 1493. However, it is noted that the vehicle emissions standards beyond model year 2020 may not occur if the federal SAFE Vehicles Rules and the One National Program on Federal Preemption of State Fuel Economy Standards are upheld by the Advanced Clean Cars programs.
The Advanced Clean Cars program includes Low-Emission Vehicle regulations that reduce criteria pollutants and GHG emissions from light- and medium-duty vehicles, and the ZEV regulation, which requires manufacturers to produce an increasing number of pure ZEVs (meaning battery electric and fuel cell electric vehicles), with provisions to also produce plug-in hybrid electric vehicles in the 2018 through 2025 model years. While this action does not directly apply to individual projects, the standards would apply to all vehicles purchased or used by visitors and employees to the project. The project would designate a minimum of 8% of on-site parking for carpool and/or alternative-fueled vehicles. As such, the project would support compliance with this regulation.

Advanced Clean Truck Regulation

The Advanced Clean Truck Regulation has two components, a manufacturer sales requirement and a reporting requirement. The manufacturer component of the regulation requires manufacturers that certify Class 2b-8 chassis or complete vehicles with combustion engines would be required to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales would need to be 55% of Class 2b-3 truck sales, 75% of Class 4-8 straight truck sales, and 40% of truck tractor sales. The reporting component of the regulation requires large employers, including retailers, manufacturers, brokers, and others, to report information about shipments and shuttle services. Fleet owners (with 50 or more trucks) would be required to report on their existing fleet operations. This information would help identify future strategies to ensure that fleets purchase available zero-emission trucks and place them in service where suitable to meet their needs. This would be applicable to occasional delivery trucks to the project.

Low Carbon Fuel Standard (EO S-01-07)

This regulation establishes a statewide goal to reduce the carbon intensity of California's transportation fuels by at least 7.5% by 2020, and a 20% reduction in carbon intensity from a 2010 baseline by 2030. While this action does not directly apply to individual projects, future employees and visitors to the project would use transportation fuels in compliance with this regulation. GHG emissions related to vehicular travel by project would benefit from this regulation and mobile source emissions generated by future employees and visitors to the project would be reduced with implementation of the LCFS.

SB 375

SB 375 establishes mechanisms for the development of regional targets for reducing passenger vehicle GHG emissions. Under SB 375, CARB is required, in consultation with the State's Metropolitan Planning Organizations, to set regional GHG reduction targets for the passenger vehicle and light-duty truck sector for 2020 and 2035. While this action does not directly apply to individual projects, the project would not conflict with the SCAG 2020-2045 RTP/SCS goals and objectives under SB 375 to implement "smart growth." As discussed below, the project would not conflict with the SCAG 2020-2045 RTP/SCS.
The project would incorporate physical and operational project characteristics that would reduce vehicle trips and VMT and encourage alternative modes of transportation for visitors and employees. The project would support reducing VMT given its location at an urban infill location with nearby access to public transportation within 0.25 mile of the project. The project site is well served by public transit. Specifically, the Los Angeles County Metropolitan Transportation Authority (Metro) 20 and 720 bus lines on Wilshire Boulevard and the Metro 217, 218, and 780 bus lines on Fairfax Avenue all stop within half a block of the project site. In addition, Metro is currently constructing an extension of the Metro system D Line (Purple). This Metro project will construct three new heavy-rail subway stations along Wilshire Boulevard, which will serve the project site. The new stations will be located at Wilshire Boulevard/La Brea Avenue, Wilshire Boulevard/Fairfax Avenue, and Wilshire Boulevard/La Cienega Boulevard. They are slated to open for service in 2024. The project would also reduce vehicle trips and VMT by implementing a Transportation Demand Management program for employee and visitor vehicle trips to increase alternative modes such as walking, bicycling, public transit, and rideshare. To further reduce reliance on fossil fuels and transportation-related GHG emissions, the project could designate a minimum of 8% of on-site parking for carpool and/or alternative-fueled vehicles.

California Integrated Waste Management Act of 1989 and AB 341

The Integrated Waste Management Act (IWMA) mandated that State agencies develop and implement an integrated waste management plan which outlines the steps to be taken to divert at least 50% of their solid waste from disposal facilities. AB 341 directs CalRecycle to develop and adopt regulations for mandatory commercial recycling and sets a statewide goal for 75% disposal reduction by the year 2020. In addition, the City has developed and is in the process of implementing the Solid Waste Integrated Resources Plan, also referred to as the Zero Waste Plan, the goal of which is to lead the City toward being a "zero waste" city by 2030. While this action does not directly apply to individual projects, the project would benefit from the IWMA and the Solid Waste Integrated Resources Plan inasmuch as it would be served by a solid waste collection and recycling service that would include mixed-waste processing, and that yields waste diversion results comparable to source separation and consistent with citywide recycling targets. According to the City of Los Angeles Zero Waste Progress Report (March 2013), the City achieved a landfill diversion rate of approximately 76% by year 2012.

As demonstrated above, the project would not conflict with the future anticipated statewide GHG reduction goals. CARB has outlined a number of potential strategies for achieving the 2030 statewide reduction target of 40% below 1990 levels, as mandated by SB 32. These potential strategies include using renewable resources for half of the State's electricity by 2030, increasing the fuel economy of vehicles and the number of zero-emission or hybrid vehicles, reducing the rate of growth in VMT, supporting other alternative transportation options, and use of high-efficiency appliances, water heaters, and HVAC systems. The project would benefit from statewide and utility-provider efforts toward increasing the portion of electricity provided from renewable resources. The utility provider for the project, LADWP, provided 35% of 2021 electricity purchases from renewable sources and is required to provide 50% by 2025, 60% by 2030, and 100% by 2045. The project would also benefit from statewide efforts toward increasing the fuel economy standards of vehicles. The project would support reducing VMT, given its location at an infill site close to existing transit options, as described above. As a result, the project would not conflict with applicable Climate Change Scoping Plan strategies and regulations to reduce GHG emissions.

Post-2030 Analysis

The 2017 and 2022 Scoping Plan also outline strategies to reduce GHG emissions to achieve the 2030 target from sectors that are not directly controlled or influenced by the project, but nonetheless contribute to project-related GHG emissions. For instance, the project itself is not subject to the cap-and-trade regulation; however, project-related emissions would decline pursuant to the regulation as utility providers and transportation fuel producers are subject to renewable energy standards, cap-and-trade, and the LCFS. While CARB is in the process of expanding the regulatory framework to meet the 2030 reduction target based on the existing laws and strategies in the 2022 Scoping Plan, the project would support or not impede implementation of these potential GHG reduction strategies identified by CARB for all the reasons summarized above.

A report was published on the California PATHWAYS model that determined that "meeting the state's 2030 climate goals requires scaling up and using technologies already in the market such as energy efficiency and renewables, while pursing aggressive market transformation of new technologies that have not yet been utilized at scale in California (for example, zero-emission vehicles and electric heat pumps)" (CEC 2018:3). Priority GHG reduction strategies include energy efficiency in buildings, renewable energy, and smart growth through increased use of public transit, walking, biking, telepresence, and denser, mixed-use community design. The project would not conflict with these strategies, given it would incorporate renewable energy measures, including solar photovoltaic panels to reduce the amount of electricity drawn from City utilities, and energy efficient measures, including water demand reduction measures, minimizing energy use to support efforts by its utility provider, LADWP, to obtain renewable energy pursuant to State mandates. Furthermore, the project would support the priority market transformation strategy of zero-emission light-duty vehicles by providing for the installation of the conduit and panel capacity to accommodate future electric vehicle charging stations. Therefore, the project would not conflict with the findings relevant to the project from the updated California PATHWAYS model report (CEC 2018).

With statewide efforts underway to facilitate the State's achievement of those goals, it is reasonable to expect the project's GHG emissions to decline from their early operational years, as the regulatory initiatives identified by CARB in the 2022 Scoping Plan are implemented, and other technological innovations occur. Stated differently, the project's emissions at buildout likely represent the maximum emissions for the project, as anticipated regulatory developments and technology advances are expected to reduce emissions associated with the project, such as emissions related to electricity use and vehicle use.

Even though the 2022 Scoping Plan and supporting documentation do not provide an exact regulatory and technological roadmap to achieve 2050 goals, they demonstrate that various combinations of policies could allow the Statewide emissions level to remain very low through 2050, suggesting that the combination of new technologies and other regulations not analyzed in the study or not currently feasible at the time the 2022 Scoping Plan was adopted could enable the State to meet the 2050 targets. For example, the 2022 Scoping Plan states some policies are not feasible at this time, such as Net Zero Carbon Buildings, but that this type of policy would be necessary to meet the 2050 target.

Based on the above, the project would not conflict with CARB's Climate Change Scoping Plan, and there would be an anticipated decline in project emissions once fully constructed and operational; the project would not conflict with the State's GHG reduction targets for 2030 and 2050. Therefore, impacts would be less than significant.

SCAG's 2020-2045 RTP/SCS

Transportation-related GHG emissions would be the largest source of emissions from the project. This finding is consistent with the findings in regional plans, including the 2020-2045 RTP/SCS, which recognizes that the transportation sector is the largest contributor to the state's GHG emissions. At the regional level, the 2020-2045 RTP/SCS is an applicable plan adopted for the purpose of reducing GHGs.

The purpose of the 2020-2045 RTP/SCS is to achieve the regional per-capita GHG reduction targets for the passenger vehicle and light-duty truck sector established by CARB pursuant to SB 375. To accomplish this goal, the 2020-2045 RTP/SCS identifies various strategies to reduce per-capita VMT. The 2020-2045 RTP/SCS is expected to help SCAG reach its GHG reduction goals, as identified by CARB, with reductions in per-capita passenger vehicle GHG emissions for specified target years.

In addition to demonstrating the region's ability to attain and exceed the GHG emission reduction targets set forth by CARB, the 2020-2045 RTP/SCS outlines a series of actions and strategies for integrating the transportation network with an overall land use pattern that responds to projected growth, housing needs, changing demographics, and transportation demands. Thus, successful implementation of the 2020-2045 RTP/SCS would result in more complete communities with a variety of transportation and housing choices, while reducing automobile use. Regarding individual developments, such as the project, strategies and policies set forth in the 2020-2045 RTP/SCS can be grouped into the following three categories: 1) reduction of vehicle trips and VMT, 2) increased use of alternative fuel vehicles, and 3) improved energy efficiency. These strategies and policies are addressed below.

In order to assess the project's potential to conflict with the 2020-2045 RTP/SCS, this section analyzes the project's land use characteristics for consistency with the strategies and policies set forth in the 2020-2045 RTP/SCS to meet GHG emission-reduction targets set by CARB. Generally, projects are considered to not conflict with applicable land use plans and regulations, such as SCAG's 2020-2045 RTP/SCS, if they are compatible with the general intent of the plans and would not preclude the attainment of their primary goals. The project would not conflict with the 2020-2045 RTP/SCS goals and benefits intended to improve mobility and access to diverse destinations, provide better "placemaking," provide more transportation choices, and reduce vehicular demand and associated emissions. Thus, successful implementation of the 2020-2045 RTP/SCS would result in more complete communities with a variety of transportation and housing choices, while reducing automobile use.

Integrated Growth Forecast

The 2020-2045 RTP/SCS provides socioeconomic forecast projections of regional population growth. The population, housing, and employment forecasts, which are adopted by SCAG's Regional Council, are based on the local plans and policies applicable to the specific area; these are used by SCAG in all phases of implementation and review. While the project does not propose residential uses, new employees would be introduced by the project. According to the 2020-2045 RTP/SCS, the employment forecast for the City of Los Angeles Subregion in 2021 is approximately 1,897,883 employees. In 2028, the projected operation year of the project, the City of Los Angeles Subregion is anticipated to have 1,937,552 employees. Thus, the project's estimated 42 employees would constitute a very small percentage of the city's employment growth forecasted between 2021 and 2028. Accordingly, the project's generation of employees would not conflict with employment generation projections contained in the 2020-2045 RTP/SCS.

VMT Reduction Strategies and Policies

The project site is well served by public transit. Specifically, the Metro 20 and 720 bus lines on Wilshire Boulevard and the Metro 217, 218, and 780 bus lines on Fairfax Avenue all stop within half a block of the project site. In addition, Metro is currently constructing an extension of the Metro system D Line (Purple), which will include construction of three new heavy-rail subway stations along Wilshire Boulevard, which will serve the project site. The new stations will be located at Wilshire Boulevard/La Brea Avenue, Wilshire Boulevard/Fairfax Avenue, and Wilshire Boulevard/La Cienega Boulevard. They are slated to open for service in 2024.

In addition, the project was reviewed to determine potential inconsistencies with GHG reduction targets forecasted in the SCAG RTP/SCS. The project was analyzed using a total VMT threshold (as opposed to an efficiency-based impact threshold). The project site functions as a regional attraction and the proposed project would result in a net increase in regional VMT. Since the project would result in a net increase in VMT, further evaluation was necessary to determine whether this project would be inconsistent with the VMT and GHG reduction goals of the SCAG RTP/SCS.

It was determined that, without mitigation measures, the project may be inconsistent with SCAG's goals related to improving mobility and accessibility, ensuring safety, maximizing transportation productivity, encouraging active transportation, and improving air quality. The project does not include transportation improvements to encourage and improve active transportation and public transit outside of on-site access and circulation improvements.

In conclusion, the project may conflict with the following relevant RTP/SCS goals:

- Improve mobility, accessibility, reliability, and travel safety for people and goods
- Enhance the preservation, security, and resilience of the regional transportation system
- Increase person and goods movement and travel choices within the transportation system
- Reduce GHG emissions and improve air quality
- Leverage new transportation technologies and data-driven solutions that result in more efficient travel

Energy Efficiency Strategies and Policies

The 2020-2045 RTP/SCS includes strategies for individual developments, such as the project, to improve energy efficiency (e.g., reducing energy consumption) to reduce GHG emissions. The project has been designed and would be constructed to incorporate environmentally sustainable building features and construction protocols identified in the CALGreen Code. These standards would reduce energy and water usage and waste and, thereby, reduce associated GHG emissions and help minimize the impact on natural resources and infrastructure. The project would include energy-saving measures, including enhanced daylighting; rainwater collection leading to bioswales; a sloped green roof; rooftop solar photovoltaic panels; HVAC systems that would be sized and designed in compliance with the CALGreen Code to maximize energy efficiency caused by heat loss and heat gain; and new and existing tree canopies to protect building walls from sun exposure and provide shade for the ground area. Daylighting is the controlled admission of natural light, direct sunlight, and diffused-skylight into a building to reduce electric lighting and save energy. By providing a direct link to the dynamic and perpetually evolving patterns of outdoor illumination, daylighting helps create a visually stimulating and productive environment for building occupants, while reducing as much as one-third of total building energy costs. These measures were generally accounted for based on compliance with Title 24 standards. Furthermore, the project would incorporate design features, such as solar photovoltaic panels, to reduce the amount of electricity demand from City utilities.

The project would include water sustainability features, which would include, but not be limited to, the installation of low-flow toilets, low-flow faucets, low-flow showers, and other energy and resource conservation measures. In addition, the project would provide sustainability features, such as stormwater capture and reuse system and drought-tolerant landscaping, to reduce the project's outdoor water demand, thereby reducing the project's GHG emissions associated with water conveyance and wastewater treatment. Therefore, based on the above, the project would not conflict with energy strategies in the 2020-2045 RTP/SCS.

County of Los Angeles General Plan

The project would meet the County's General Plan goals to address the impact of GHGs and climate change. The project would implement project design features to reduce energy consumption and encourage energy conservation. Additionally, HVAC systems would be sized and designed in compliance with the CALGreen Code to maximize energy efficiency caused by heat loss and heat gain; and new and existing tree canopies would protect building walls from sun exposure and provide shade for the ground area. The project would provide sustainability features, such as rainwater collection leading to bioswales, a sloped green roof, and the use of drought-tolerant landscaping to reduce water consumption. All of these features would reduce the project's energy consumption, reduce water consumption, and encourage energy conservation. As such, the project would not conflict with the goals of the County of Los Angeles General Plan.

OurCounty – Los Angeles Countywide Sustainability Plan

The project would be consistent with the OurCounty regional sustainability plan, which includes 12 goals. The project would implement project design features to reduce energy consumption and encourage energy conservation. Additionally, HVAC systems would be sized and designed in compliance with the CALGreen standards and the County of Los Angeles Green Building Standards Code to maximize energy efficiency caused by heat loss and heat gain. New and existing tree canopies would protect building walls from sun exposure and provide shade for the ground area. The project would also provide sustainability features, such as rainwater collection leading to bioswales, a sloped green roof, and the use of drought-tolerant landscaping to reduce water consumption. All these features would use efficient technologies and practices that reduce resource use, improve health, and increase resilience and would effectively manage waste, water, energy, and material resources consistent with the goals of OurCounty. For these reasons, the project would not conflict with the goals of the OurCounty Countywide Sustainability Plan.

City of Los Angeles General Plan

The project would meet the City's General Plan goals, objectives, and policies to address the air quality improvement programs and strategies (City of Los Angeles 2015). Consistent with the six goals of the City of Los Angeles General Plan, the project would reduce particulate air pollutants emanating from unpaved areas, parking lots, and construction sites by complying with SCAQMD Rule 403 requiring fugitive dust control measures. The project would also provide visitors with the ability to access nearby public transit and opportunities for walking and biking, which would facilitate minimization of VMT and related vehicular GHG emissions, and would not conflict with the goals to reduce VMT. Bicycle parking and connections to walking and biking paths would also be provided. The project would implement project design features to reduce energy consumption and encourage energy conservation. Features of the project would reduce the project's energy consumption, reduce water consumption, and encourage energy conservation, supporting the City General Plan goals for a reduction in energy consumption, a shift to nonpolluting sources of energy in its buildings and operations, and reducing energy consumption and associated air emissions by encouraging waste reduction and recycling. For these reasons, the project would not conflict with the City of Los Angeles General Plan.

City of Los Angeles Green LA Action Plan

The project would be consistent with the City of Los Angeles Green LA Action Plan by including project design features to reduce energy consumption and encourage energy conservation (City of Los Angeles 2007). Additionally, HVAC systems would be sized and designed in compliance with the CALGreen standards and the County of Los Angeles Green Building Standards Code to maximize energy efficiency caused by heat loss and heat gain. New and existing tree canopies would protect building walls from sun exposure and provide shade for the ground area.

City of Los Angeles Green New Deal/Sustainable City Plan

The City's Green New Deal includes both short-term and long-term aspirations through the year 2050 in various topic areas, including water, solar power, energy-efficient buildings, carbon and climate leadership, waste and landfills, housing and development, mobility and transit, and air quality, among others. While not a plan adopted solely to reduce GHG emissions, within the City's Green New Deal, climate mitigation is one of eight explicit benefits that help define its strategies and goals. Although the Green New Deal mainly targets GHG emissions related to City-owned buildings and operations, certain reductions associated with the project would promote the Green New Deal's goals. Such measures include increasing renewable energy usage, reduction of per-capita water usage, promotion of walking and biking, promotion of educational and recreational uses close to transit, and various recycling and trash diversion goals.

Although the City's Green New Deal is not an adopted plan or directly applicable to private development projects, the project would not conflict with these aspirations as it is an infill development consisting of educational and recreational uses on a project in proximity to transit. In addition, the project would comply with Title 24 Standards and would implement measures to reduce overall energy usage compared to baseline conditions. Furthermore, the project would also result in GHG reductions beyond those specified by the City and would minimize its GHG emissions by implementing project design features that reduce electricity and water consumption. The project would be serviced by providers who comply with the City of Los Angeles Solid Waste Management Policy Plan, and the Exclusive Franchise System Ordinance (Ordinance No. 182,986) to further the aspirations included in the Green New Deal with regard to energy-efficient buildings, waste, and landfills. The project would also provide bicycle parking and connections to walking and biking paths to further reduce VMT and decrease GHG emissions.

Therefore, as the project's GHG emissions would be generated in connection with a development located within the city and designed to be consistent with the applicable City plan goals and actions for reducing GHG emissions, the project would not conflict with these City plans adopted for the purpose of reducing GHG emissions, and the project's GHG emissions would result in less-than-significant impacts.

Conclusion

In summary, Impact GHG-1 would be significant given the project plans have not been fully developed and it cannot yet be determined whether the project includes the installation of natural gas infrastructure and/or the use of natural gas–fired appliances. Further, while a commitment to electric vehicle charging stations has been made, the number of charging stations that would be installed is not known. For these reasons, the project could result in a significant impact related to GHG. However, with implementation of the mitigation measures provided in Section 7.2, impacts would be less than significant.

Regarding Impact GHG-2, the project may be inconsistent with regional plans related to mobility and GHG reductions, specifically in relation to SCAG's 2020-2045 RTP/SCS. It was determined that without mitigation measures, the project may be inconsistent with SCAG's goals related to improving mobility and accessibility, transportation productivity, and encouraging active transportation. The project does not include transportation improvements to encourage and improve active transportation and public transit outside of on-site access and circulation improvements. However the project does include design features that would reduce the project's energy consumption, reduce water consumption, and encourage energy conservation, as well as provide visitors with public transportation incentives, with the ability to access nearby public transit and opportunities for walking and biking, all of which are consistent with the County of Los Angeles General Plan, OurCounty Countywide Sustainability Plan, City of Los Angeles General Plan, City of Los Angeles Green LA Action Plan, and the City's Green New Deal. Thus, the project could result in a significant impact related to consistency with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. However, with implementation of the mitigation measures provided in Section 7.2, impacts would be less than significant.

7.1 Cumulative Impacts

7.1.1 Air Quality

The geographic area affected by the project and its potential to contribute to cumulative impacts varies based on the environmental resource under consideration. For air quality, the geographic scope for the project's cumulative impact analysis encompasses the Air Basin.

Based on SCAQMD guidance, individual construction projects that exceed SCAQMD's recommended daily thresholds for project-specific impacts would cause a cumulatively considerable increase in emissions for those pollutants for which the Air Basin is in non-attainment, as discussed below (SCAQMD 2003a):

> *As Lead Agency, the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR… Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant.*

Therefore, consistent with the accepted and established SCAQMD cumulative impact evaluation methodologies, the project's construction or operation emissions would be considered cumulatively considerable if project-specific emissions exceed an applicable SCAQMD-recommended significance threshold.

As previously analyzed, the project would be consistent with the SCAQMD's AQMP during both project construction and operation (Impact AQ-1), and the project would not result in a cumulatively considerable net increase of criteria pollutants that would exceed applicable SCAQMD thresholds during either construction or operation (Impact AQ-2). In addition, the project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people during either project construction or operation (Impact AQ-4). Therefore, and consistent with SCAQMD guidance, the project would not contribute significantly to cumulative impacts associated with these issues.

However, the project's toxic air contamination HRA determined the project could expose sensitive residential receptors to substantial pollutant concentrations during construction related to diesel exhaust emissions (Impact AQ-3). Given the construction and diesel exhaust emissions that could occur in the vicinity of the project concurrent with project construction, prior to mitigation, this impact could be considered both a direct impact and a contribution to cumulative impacts related to diesel emissions.

In summary, for most of the threshold issue areas for the topic of air quality, the project would not contribute significantly to cumulative impacts. However, regarding toxic air contamination, the HRA determined that the project could contribute significantly to pollutant concentrations during construction (Impact AQ-3). Prior to mitigation, this contribution would be both a significant direct impact of the project as well as a potentially significant contribution to cumulative toxic air contamination in the vicinity of the project. The project's air pollutant emissions related to diesel exhaust during construction could result in a cumulative contribution to air pollution in the region, which would be *significant*. Operation of the project would not result in a significant contribution to air pollution in the region.

With implementation of Mitigation Measure MM-AQ-1, the estimated cancer risk during project construction would be reduced below the SCAQMD threshold of 10 in 1 million. Therefore, potential impacts to sensitive receptors associated with construction of the project would be less than significant with mitigation. As such, and consistent with SCAQMD guidance, after implementation of the mitigation measure, the project's contribution to diesel emissions would be less than significant both individually and cumulatively.

7.1.2 Greenhouse Gas Emissions

The geographic scope considered in the cumulative impact analysis for GHG emissions is global. Adverse environmental impacts of cumulative GHG emissions, including sea level rise, increased average temperatures, more drought years, and more large forest fires, are already occurring. As a result, cumulative impacts related to GHG emissions are significant.

The analysis of a project's GHG emissions is inherently a cumulative impact analysis because impacts of climate change are experienced on a global scale regardless of the location of GHG emission sources. The GHG emissions from an individual development project are not typically going to have a noticeable impact on the global climate, but individual projects contribute to the significant cumulative problem of global warming and climate change. As the California Supreme Court has indicated, "an individual project's emissions will most likely not have any appreciable impact on the global problem by themselves, but they will contribute to the significant impact caused by greenhouse gas emissions from other sources around the globe. The question therefore becomes whether the project's incremental addition of greenhouse gases is "cumulatively considerable" in light of the global problem" (Cleveland National Forest Foundation v. San Diego Association of Governments 2017:14).

Consistent with the inherent consideration of GHG emissions as a cumulative contribution to a global environmental condition, the analysis presented previously considers the potential for the project to contribute considerably to the cumulative impact of global climate change.

The analysis provided in the previous sections demonstrates that the project includes many design features that support the reduction of GHG emissions, including features that would reduce the project's energy consumption, reduce water consumption, and encourage energy conservation, as well as provide visitors with public transportation incentives, the ability to access nearby public transit, and opportunities for walking and biking. However, it has also been determined that, without additional measures, the project may be inconsistent with SCAG's goals related to improving mobility and accessibility, transportation productivity, and encouraging active transportation. This is because the project does not include transportation improvements to encourage and improve active transportation and public transit outside of on-site access and circulation improvements. Also, since detailed design plans have not been developed for the project at this stage, it is also not known whether natural gas use would be included in the final design. As a fossil fuel, natural gas production and use are significant contributors to GHG emissions. For the building sector to achieve carbon neutrality, natural gas usage will need to be phased out and replaced with electricity usage, and electrical generation will need to shift to 100% carbon-free sources. Thus, without mitigation, the project could cause a *significant* contribution to the cumulative impact of GHG emissions and global climate change. With implementation of the identified mitigation measures in Section 7.2, below, impacts would be less than significant.

7.2 Mitigation Measures

7.2.1 Construction

MM-AQ-1: To reduce the potential for health risks as a result of construction of the project, the following measures shall be implemented:

- Prior to the start of construction activities, it shall be ensured that all 75 horsepower or greater diesel-powered equipment are powered with CARB certified Tier 4 Interim engines, except where the County establishes that Tier 4 Interim equipment is not available.

There are several other SCAQMD rules and regulations that serve as mitigation measures for the project construction. These rules are:

- SCAQMD Rule 403, which requires projects to incorporate fugitive dust control measures;
- SCAQMD Rule 1113, which limits the volatile organic compound content of architectural coating; and
- SCAQMD Regulation XIII, New Source Review, which requires new on-site facility nitrogen oxide emissions to be minimized through the use of emission control measures (e.g., use of best available technology control technology for new combustion sources such as boilers and water heaters).

Based on the above analysis, the project's impact would be less than significant, with the measures identified above.

7.2.2 Operation

MM-GHG-1: The modifications to the George C. Page Museum and the development of the new museum shall not include the installation of natural gas infrastructure. Future operation of the new facilities shall not use natural gas–fired appliances. In addition, the project shall provide more electric vehicle charging stations than the mandatory requirements in the Los Angeles County Code, Title 31, Green Building Standards, electric vehicle charging space and charging station calculations (Code Section 5.106.5.3.3).

MM-GHG-2: In consultation with the LADOT, the Los Angeles County Museum of Natural History Foundation (Foundation) shall prepare and implement a Transportation Demand Management program to reduce museum employee and visitor vehicle trips and increase alternative modes such as walking, bicycling, public transit, and rideshare.

The Foundation shall designate an existing member of staff as the on-site Transportation Demand Management Coordinator. This coordinator shall be responsible for monitoring and tracking employee and visitor mode share and annual reporting to LADOT.

Employee Strategies:

Information shall be distributed to employees and displayed on a bulletin board, display case, or kiosk (displaying transportation information) where the greatest number of employees are likely to see it. The following measures may be applied to reduce employee vehicle trips and VMT:

- Provide a transportation information bulletin board on-site with public transit information, contact information for rideshare and transit, ridesharing promotional material, bike route and facility information, and listing of on-site services or facilities.
- Provide facilities on-site to support bicycling to work, such as secure bike parking, showers, and lockers.
- Encourage and support participation in the Los Angeles County Metropolitan Transportation Authority (Metro) vanpool, including subsidies for participation.
- Implement paid parking for employees.
- Subsidize transit passes.
- Offer flexible work schedules and telecommuting, when feasible.

Visitor Strategies:

Transportation information for visitors shall be displayed on La Brea Tar Pit's website and distributed with physical marketing materials. The following measures may be applied to reduce visitor vehicle trips and VMT:

- Advertise and offer discounted museum tickets for visitors who use public transit or a bicycle to visit the project.
- Provide and maintain secure on-site bicycle parking for visitors and monitor usage to determine if additional bicycle racks are needed.
    - Provide wayfinding signage directing bicyclists from the visitor entrances to where on-site bicycle parking is located.
    - Ensure bicycle parking is well lit and monitored by staff.
- Continue to have paid parking for visitors.
- Coordinate with Metro to improve transit access and user comfort and encourage visitors to take local bus service or the future Purple Line extension to La Brea Tar Pits, through the following measures:
    - Improve pedestrian wayfinding between the planned Purple Line station, local bus stops, and La Brea Tar Pits.

   - Implement bus stop improvements such as bus stop shelters along Wilshire Boulevard that would be used by La Brea Tar Pits visitors.
   - Coordinate with Metro and the City of Los Angeles to ensure that safe and comfortable pedestrian facilities (such as ADA curb ramps and continental crosswalks) are available between local bus stops and the project entrances, including at the Curson Avenue/Wilshire Boulevard intersection.
- Coordinate with the City of Los Angeles to implement planned bikeways in the vicinity of the project site and contribute to the implementation of the bikeways. This includes planned bikeways along Wilshire Boulevard and West 6th Street.

Implementation of these mitigation measures would encourage employees and visitors to reduce their vehicle trips and contribute to VMT and GHG reduction goals. These measures also support multimodal connectivity in the study area. With the implementation of these measures, GHG impacts would be reduced to less than significant with mitigation.

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APPENDIX A

CalEEMod Results
Air Pollutant and Greenhouse Gas Emission Calculations

La Brea Tar Pits Project v3 Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	La Brea Tar Pits Project v3
Construction Start Date	1/1/2024
Operational Year	2028
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	0.50
Precipitation (days)	18.4
Location	5801 Wilshire Blvd, Los Angeles, CA 90036, USA
County	Los Angeles-South Coast
City	Los Angeles
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	4317
EDFZ	16
Electric Utility	Los Angeles Department of Water & Power
Gas Utility	Southern California Gas
App Version	2022.1.1.18

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

Other Non-Asphalt Surfaces	140	1000sqft	3.21	0.00	0.00	0.00	—	—
Parking Lot	81.0	1000sqft	1.86	0.00	0.00	0.00	—	—
Library	64.0	1000sqft	1.47	64,000	0.00	0.00	—	—
Library	40.0	1000sqft	0.92	40,000	0.00	0.00	—	—
Library	2.00	1000sqft	0.05	2,000	0.00	0.00	—	—
City Park	6.00	Acre	6.00	0.00	6.00	6.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers
Construction	C-10-A	Water Exposed Surfaces
Construction	C-10-B	Water Active Demolition Sites
Construction	C-10-C	Water Unpaved Construction Roads
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads

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.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	7.26	9.51	57.1	55.8	0.08	2.46	21.6	24.0	2.26	9.44	11.7	—	9,545	9,545	0.39	0.28	12.7	9,614
Mit.	1.98	8.96	24.4	48.3	0.08	0.27	8.74	9.01	0.26	3.81	4.07	—	9,545	9,545	0.39	0.28	12.7	9,614
% Reduced	73%	6%	57%	13%	—	89%	59%	62%	88%	60%	65%	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	7.26	6.09	57.1	54.9	0.11	2.46	21.6	24.0	2.26	9.44	11.7	—	15,475	15,475	0.73	1.35	0.58	15,895
Mit.	1.96	1.66	29.6	47.5	0.11	0.28	8.74	9.01	0.27	3.81	4.07	—	15,475	15,475	0.73	1.35	0.58	15,895
% Reduced	73%	73%	48%	14%	—	89%	59%	62%	88%	60%	65%	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.94	4.94	47.4	45.2	0.07	1.98	17.3	19.3	1.83	7.42	9.24	—	9,031	9,031	0.39	0.32	4.72	9,140
Mit.	1.58	2.78	21.8	40.6	0.07	0.23	7.23	7.47	0.23	3.05	3.28	—	9,031	9,031	0.39	0.32	4.72	9,140
% Reduced	73%	44%	54%	10%	—	88%	58%	61%	88%	59%	65%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.08	0.90	8.66	8.24	0.01	0.36	3.16	3.52	0.33	1.35	1.69	—	1,495	1,495	0.06	0.05	0.78	1,513
Mit.	0.29	0.51	3.98	7.41	0.01	0.04	1.32	1.36	0.04	0.56	0.60	—	1,495	1,495	0.06	0.05	0.78	1,513
% Reduced	73%	44%	54%	10%	—	88%	58%	61%	88%	59%	65%	—	—	—	—	—	—	—

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	7.26	6.10	57.1	55.8	0.08	2.46	21.6	24.0	2.26	9.44	11.7	—	9,545	9,545	0.39	0.18	5.26	9,614
2025	2.45	2.07	13.1	28.2	0.03	0.47	4.36	4.83	0.43	0.84	1.26	—	6,372	6,372	0.27	0.27	12.7	6,471
2026	2.53	9.51	13.6	29.9	0.03	0.44	6.10	6.54	0.40	1.04	1.45	—	6,751	6,751	0.29	0.28	12.6	6,855
2027	3.00	2.55	17.9	35.8	0.04	0.63	6.03	6.66	0.58	1.03	1.60	—	7,752	7,752	0.33	0.28	11.3	7,856

Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	7.26	6.09	57.1	54.9	0.11	2.46	21.6	24.0	2.26	9.44	11.7	—	15,475	15,475	0.73	1.35	0.58	15,895
2025	2.44	2.06	13.3	26.1	0.03	0.47	4.36	4.83	0.43	0.84	1.26	—	6,228	6,228	0.28	0.27	0.33	6,317
2026	2.25	1.88	12.5	25.2	0.03	0.41	4.36	4.77	0.38	0.84	1.21	—	6,157	6,157	0.27	0.27	0.30	6,244
2027	2.16	1.81	12.0	24.3	0.03	0.36	4.36	4.73	0.34	0.84	1.17	—	6,088	6,088	0.19	0.26	0.28	6,172
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	5.94	4.94	47.4	45.2	0.07	1.98	17.3	19.3	1.83	7.42	9.24	—	9,031	9,031	0.39	0.32	3.01	9,140
2025	2.09	1.76	11.5	22.9	0.03	0.40	3.65	4.05	0.36	0.70	1.07	—	5,371	5,371	0.24	0.23	4.72	5,451
2026	1.99	3.26	11.1	22.6	0.03	0.36	4.01	4.36	0.33	0.75	1.07	—	5,406	5,406	0.24	0.23	4.42	5,485
2027	1.50	1.27	9.07	17.2	0.02	0.31	2.92	3.23	0.29	0.50	0.79	—	3,815	3,815	0.12	0.14	2.42	3,862
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.08	0.90	8.66	8.24	0.01	0.36	3.16	3.52	0.33	1.35	1.69	—	1,495	1,495	0.06	0.05	0.50	1,513
2025	0.38	0.32	2.09	4.18	0.01	0.07	0.67	0.74	0.07	0.13	0.19	—	889	889	0.04	0.04	0.78	902
2026	0.36	0.60	2.02	4.13	0.01	0.07	0.73	0.80	0.06	0.14	0.20	—	895	895	0.04	0.04	0.73	908
2027	0.27	0.23	1.66	3.13	< 0.005	0.06	0.53	0.59	0.05	0.09	0.14	—	632	632	0.02	0.02	0.40	639

2.3. Construction Emissions by Year, Mitigated

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

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.82	1.66	24.4	48.3	0.08	0.27	8.74	9.01	0.26	3.81	4.07	—	9,545	9,545	0.39	0.18	5.26	9,614
2025	1.68	1.47	11.8	30.4	0.03	0.13	3.26	3.39	0.12	0.73	0.85	—	6,372	6,372	0.27	0.27	12.7	6,471
2026	1.81	8.96	12.9	32.2	0.03	0.15	3.89	4.05	0.14	0.82	0.97	—	6,751	6,751	0.29	0.28	12.6	6,855
2027	1.98	1.76	17.4	38.6	0.04	0.20	3.83	4.02	0.19	0.81	0.99	—	7,752	7,752	0.33	0.28	11.3	7,856

Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.96	1.66	29.6	47.5	0.11	0.28	8.74	9.01	0.27	3.81	4.07	—	15,475	15,475	0.73	1.35	0.58	15,895
2025	1.67	1.46	12.0	28.3	0.03	0.13	3.26	3.39	0.12	0.73	0.85	—	6,228	6,228	0.28	0.27	0.33	6,317
2026	1.53	1.33	11.8	27.5	0.03	0.12	3.26	3.39	0.11	0.73	0.84	—	6,157	6,157	0.27	0.27	0.30	6,244
2027	1.48	1.28	11.7	26.6	0.03	0.11	3.26	3.37	0.11	0.73	0.83	—	6,088	6,088	0.19	0.26	0.28	6,172
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.58	1.40	21.8	40.6	0.07	0.23	7.23	7.47	0.23	3.05	3.28	—	9,031	9,031	0.39	0.32	3.01	9,140
2025	1.43	1.25	10.3	24.8	0.03	0.11	2.75	2.86	0.10	0.61	0.72	—	5,371	5,371	0.24	0.23	4.72	5,451
2026	1.37	2.78	10.4	24.6	0.03	0.11	2.88	3.00	0.10	0.63	0.74	—	5,406	5,406	0.24	0.23	4.42	5,485
2027	0.98	0.87	8.83	18.6	0.02	0.10	1.87	1.97	0.09	0.40	0.49	—	3,815	3,815	0.12	0.14	2.42	3,862
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.29	0.26	3.98	7.41	0.01	0.04	1.32	1.36	0.04	0.56	0.60	—	1,495	1,495	0.06	0.05	0.50	1,513
2025	0.26	0.23	1.89	4.52	0.01	0.02	0.50	0.52	0.02	0.11	0.13	—	889	889	0.04	0.04	0.78	902
2026	0.25	0.51	1.91	4.49	0.01	0.02	0.53	0.55	0.02	0.12	0.13	—	895	895	0.04	0.04	0.73	908
2027	0.18	0.16	1.61	3.39	< 0.005	0.02	0.34	0.36	0.02	0.07	0.09	—	632	632	0.02	0.02	0.40	639

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.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.71	8.60	9.21	43.0	0.11	0.42	8.35	8.77	0.41	2.12	2.53	59.2	15,226	15,285	6.88	0.42	25.2	15,606
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.66	8.55	9.50	40.6	0.11	0.42	8.35	8.77	0.41	2.12	2.53	59.2	14,857	14,916	6.91	0.43	1.05	15,219

Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.45	7.44	7.15	35.8	0.10	0.32	7.50	7.82	0.32	1.90	2.22	59.2	13,828	13,887	6.85	0.40	10.1	14,187
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.00	1.36	1.30	6.54	0.02	0.06	1.37	1.43	0.06	0.35	0.41	9.81	2,289	2,299	1.13	0.07	1.68	2,349

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	5.42	4.98	3.17	37.0	0.09	0.05	8.35	8.40	0.05	2.12	2.17	—	9,001	9,001	0.46	0.37	24.8	9,147
Area	—	2.59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.33	0.17	3.02	2.54	0.02	0.23	—	0.23	0.23	—	0.23	—	5,678	5,678	0.47	0.03	—	5,697
Water	—	—	—	—	—	—	—	—	—	—	—	6.36	42.7	49.1	0.65	0.02	—	70.2
Waste	—	—	—	—	—	—	—	—	—	—	—	52.9	0.00	52.9	5.29	0.00	—	185
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.41	0.41
Off-Road	0.04	0.03	0.29	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	76.2	76.2	< 0.005	< 0.005	—	76.5
Stationary	0.92	0.84	2.73	3.04	< 0.005	0.12	—	0.12	0.12	—	0.12	—	428	428	0.02	< 0.005	—	430
Total	6.71	8.60	9.21	43.0	0.11	0.42	8.35	8.77	0.41	2.12	2.53	59.2	15,226	15,285	6.88	0.42	25.2	15,606
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	5.37	4.92	3.46	34.6	0.08	0.05	8.35	8.40	0.05	2.12	2.17	—	8,632	8,632	0.48	0.39	0.64	8,760
Area	—	2.59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.33	0.17	3.02	2.54	0.02	0.23	—	0.23	0.23	—	0.23	—	5,678	5,678	0.47	0.03	—	5,697

Water	—	—	—	—	—	—	—	—	—	—	—	6.36	42.7	49.1	0.65	0.02	—	70.2
Waste	—	—	—	—	—	—	—	—	—	—	—	52.9	0.00	52.9	5.29	0.00	—	185
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.41	0.41
Off-Road	0.04	0.03	0.29	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	76.2	76.2	< 0.005	< 0.005	—	76.5
Stationary	0.92	0.84	2.73	3.04	< 0.005	0.12	—	0.12	0.12	—	0.12	—	428	428	0.02	< 0.005	—	430
Total	6.66	8.55	9.50	40.6	0.11	0.42	8.35	8.77	0.41	2.12	2.53	59.2	14,857	14,916	6.91	0.43	1.05	15,219
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.84	4.44	3.17	32.1	0.08	0.05	7.50	7.55	0.05	1.90	1.95	—	7,936	7,936	0.43	0.35	9.72	8,061
Area	—	2.59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.33	0.17	3.02	2.54	0.02	0.23	—	0.23	0.23	—	0.23	—	5,678	5,678	0.47	0.03	—	5,697
Water	—	—	—	—	—	—	—	—	—	—	—	6.36	42.7	49.1	0.65	0.02	—	70.2
Waste	—	—	—	—	—	—	—	—	—	—	—	52.9	0.00	52.9	5.29	0.00	—	185
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.41	0.41
Off-Road	0.03	0.02	0.21	0.37	< 0.005	0.01	—	0.01	0.01	—	0.01	—	54.3	54.3	< 0.005	< 0.005	—	54.5
Stationary	0.25	0.23	0.75	0.83	< 0.005	0.03	—	0.03	0.03	—	0.03	—	117	117	< 0.005	< 0.005	—	118
Total	5.45	7.44	7.15	35.8	0.10	0.32	7.50	7.82	0.32	1.90	2.22	59.2	13,828	13,887	6.85	0.40	10.1	14,187
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.88	0.81	0.58	5.86	0.01	0.01	1.37	1.38	0.01	0.35	0.36	—	1,314	1,314	0.07	0.06	1.61	1,335
Area	—	0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.06	0.03	0.55	0.46	< 0.005	0.04	—	0.04	0.04	—	0.04	—	940	940	0.08	< 0.005	—	943
Water	—	—	—	—	—	—	—	—	—	—	—	1.05	7.07	8.12	0.11	< 0.005	—	11.6
Waste	—	—	—	—	—	—	—	—	—	—	—	8.76	0.00	8.76	0.88	0.00	—	30.6
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07	0.07
Off-Road	< 0.005	< 0.005	0.04	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.99	8.99	< 0.005	< 0.005	—	9.02
Stationary	0.05	0.04	0.14	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	19.4	19.4	< 0.005	< 0.005	—	19.5

Total	1.00	1.36	1.30	6.54	0.02	0.06	1.37	1.43	0.06	0.35	0.41	9.81	2,289	2,299	1.13	0.07	1.68	2,349

2.6. Operations Emissions by Sector, Mitigated

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

Sector	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	5.42	4.98	3.17	37.0	0.09	0.05	8.35	8.40	0.05	2.12	2.17	—	9,001	9,001	0.46	0.37	24.8	9,147
Area	—	2.59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.33	0.17	3.02	2.54	0.02	0.23	—	0.23	0.23	—	0.23	—	5,678	5,678	0.47	0.03	—	5,697
Water	—	—	—	—	—	—	—	—	—	—	—	6.36	42.7	49.1	0.65	0.02	—	70.2
Waste	—	—	—	—	—	—	—	—	—	—	—	52.9	0.00	52.9	5.29	0.00	—	185
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.41	0.41
Off-Road	0.04	0.03	0.29	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	76.2	76.2	< 0.005	< 0.005	—	76.5
Stationary	0.92	0.84	2.73	3.04	< 0.005	0.12	—	0.12	0.12	—	0.12	—	428	428	0.02	< 0.005	—	430
Total	6.71	8.60	9.21	43.0	0.11	0.42	8.35	8.77	0.41	2.12	2.53	59.2	15,226	15,285	6.88	0.42	25.2	15,606
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	5.37	4.92	3.46	34.6	0.08	0.05	8.35	8.40	0.05	2.12	2.17	—	8,632	8,632	0.48	0.39	0.64	8,760
Area	—	2.59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.33	0.17	3.02	2.54	0.02	0.23	—	0.23	0.23	—	0.23	—	5,678	5,678	0.47	0.03	—	5,697
Water	—	—	—	—	—	—	—	—	—	—	—	6.36	42.7	49.1	0.65	0.02	—	70.2
Waste	—	—	—	—	—	—	—	—	—	—	—	52.9	0.00	52.9	5.29	0.00	—	185
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.41	0.41
Off-Road	0.04	0.03	0.29	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	76.2	76.2	< 0.005	< 0.005	—	76.5

Stationary	0.92	0.84	2.73	3.04	< 0.005	0.12	—	0.12	0.12	—	0.12	—	428	428	0.02	< 0.005	—	430
Total	6.66	8.55	9.50	40.6	0.11	0.42	8.35	8.77	0.41	2.12	2.53	59.2	14,857	14,916	6.91	0.43	1.05	15,219
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	4.84	4.44	3.17	32.1	0.08	0.05	7.50	7.55	0.05	1.90	1.95	—	7,936	7,936	0.43	0.35	9.72	8,061
Area	—	2.59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.33	0.17	3.02	2.54	0.02	0.23	—	0.23	0.23	—	0.23	—	5,678	5,678	0.47	0.03	—	5,697
Water	—	—	—	—	—	—	—	—	—	—	—	6.36	42.7	49.1	0.65	0.02	—	70.2
Waste	—	—	—	—	—	—	—	—	—	—	—	52.9	0.00	52.9	5.29	0.00	—	185
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.41	0.41
Off-Road	0.03	0.02	0.21	0.37	< 0.005	0.01	—	0.01	0.01	—	0.01	—	54.3	54.3	< 0.005	< 0.005	—	54.5
Stationary	0.25	0.23	0.75	0.83	< 0.005	0.03	—	0.03	0.03	—	0.03	—	117	117	< 0.005	< 0.005	—	118
Total	5.45	7.44	7.15	35.8	0.10	0.32	7.50	7.82	0.32	1.90	2.22	59.2	13,828	13,887	6.85	0.40	10.1	14,187
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.88	0.81	0.58	5.86	0.01	0.01	1.37	1.38	0.01	0.35	0.36	—	1,314	1,314	0.07	0.06	1.61	1,335
Area	—	0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.06	0.03	0.55	0.46	< 0.005	0.04	—	0.04	0.04	—	0.04	—	940	940	0.08	< 0.005	—	943
Water	—	—	—	—	—	—	—	—	—	—	—	1.05	7.07	8.12	0.11	< 0.005	—	11.6
Waste	—	—	—	—	—	—	—	—	—	—	—	8.76	0.00	8.76	0.88	0.00	—	30.6
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07	0.07
Off-Road	< 0.005	< 0.005	0.04	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.99	8.99	< 0.005	< 0.005	—	9.02
Stationary	0.05	0.04	0.14	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	19.4	19.4	< 0.005	< 0.005	—	19.5
Total	1.00	1.36	1.30	6.54	0.02	0.06	1.37	1.43	0.06	0.35	0.41	9.81	2,289	2,299	1.13	0.07	1.68	2,349

3. Construction Emissions Details

3.1. Demolition (2024) - Unmitigated

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

Location	TOG	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	3.07	2.58	24.6	21.4	0.03	1.05	—	1.05	0.97	—	0.97	—	3,372	3,372	0.14	0.03	—	3,384
Demolition	—	—	—	—	—	—	0.37	0.37	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.47	1.47	< 0.005	0.15	0.15	—	5.17	5.17	< 0.005	< 0.005	0.01	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.07	2.58	24.6	21.4	0.03	1.05	—	1.05	0.97	—	0.97	—	3,372	3,372	0.14	0.03	—	3,384
Demolition	—	—	—	—	—	—	0.37	0.37	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.47	1.47	< 0.005	0.15	0.15	—	5.19	5.19	< 0.005	< 0.005	< 0.005	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.21	1.85	17.6	15.3	0.02	0.75	—	0.75	0.69	—	0.69	—	2,421	2,421	0.10	0.02	—	2,429
Demolition	—	—	—	—	—	—	0.26	0.26	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	1.00	1.00	< 0.005	0.10	0.10	—	3.72	3.72	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.40	0.34	3.22	2.80	< 0.005	0.14	—	0.14	0.13	—	0.13	—	401	401	0.02	< 0.005	—	402
Demolition	—	—	—	—	—	—	0.05	0.05	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.18	0.18	< 0.005	0.02	0.02	—	0.62	0.62	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.25	0.22	0.24	3.77	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	706	706	0.03	0.02	2.78	—
Vendor	0.02	0.01	0.30	0.15	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	258	258	0.01	0.04	0.70	—
Hauling	0.02	0.01	0.35	0.14	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	282	282	0.02	0.05	0.65	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.25	0.22	0.28	3.19	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	669	669	0.03	0.02	0.07	—
Vendor	0.02	0.01	0.32	0.15	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	258	258	0.01	0.04	0.02	—
Hauling	0.02	0.01	0.37	0.14	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	282	282	0.02	0.05	0.02	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.18	0.16	0.20	2.41	0.00	0.00	0.46	0.46	0.00	0.11	0.11	—	487	487	0.02	0.02	0.86	—
Vendor	0.01	0.01	0.23	0.11	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	185	185	0.01	0.03	0.22	—
Hauling	0.02	< 0.005	0.27	0.10	< 0.005	< 0.005	0.05	0.06	< 0.005	0.01	0.02	—	202	202	0.01	0.03	0.20	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.04	0.44	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	80.7	80.7	< 0.005	< 0.005	0.14	—
Vendor	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	30.7	30.7	< 0.005	< 0.005	0.04	—
Hauling	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	33.5	33.5	< 0.005	0.01	0.03	—

3.2. Demolition (2024) - Mitigated

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

Location	TOG	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	0.87	0.77	10.5	18.0	0.03	0.18	—	0.18	0.17	—	0.17	—	3,372	3,372	0.14	0.03	—	3,384
Demolition	—	—	—	—	—	—	0.23	0.23	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.37	0.37	< 0.005	0.04	0.04	—	5.17	5.17	< 0.005	< 0.005	0.01	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.87	0.77	10.5	18.0	0.03	0.18	—	0.18	0.17	—	0.17	—	3,372	3,372	0.14	0.03	—	3,384
Demolition	—	—	—	—	—	—	0.23	0.23	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.37	0.37	< 0.005	0.04	0.04	—	5.19	5.19	< 0.005	< 0.005	< 0.005	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	0.56	7.53	12.9	0.02	0.13	—	0.13	0.12	—	0.12	—	2,421	2,421	0.10	0.02	—	2,429
Demolition	—	—	—	—	—	—	0.17	0.17	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.25	0.25	< 0.005	0.03	0.03	—	3.72	3.72	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.10	1.37	2.36	< 0.005	0.02	—	0.02	0.02	—	0.02	—	401	401	0.02	< 0.005	—	402
Demolition	—	—	—	—	—	—	0.03	0.03	—	< 0.005	< 0.005	—	—	—	—	—	—	—

Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.05	0.05	< 0.005	< 0.005	< 0.005	—	0.62	0.62	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.25	0.22	0.24	3.77	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	706	706	0.03	0.02	2.78	—
Vendor	0.02	0.01	0.30	0.15	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	258	258	0.01	0.04	0.70	—
Hauling	0.02	0.01	0.35	0.14	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	282	282	0.02	0.05	0.65	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.25	0.22	0.28	3.19	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	669	669	0.03	0.02	0.07	—
Vendor	0.02	0.01	0.32	0.15	< 0.005	< 0.005	0.07	0.07	< 0.005	0.02	0.02	—	258	258	0.01	0.04	0.02	—
Hauling	0.02	0.01	0.37	0.14	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	282	282	0.02	0.05	0.02	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.18	0.16	0.20	2.41	0.00	0.00	0.46	0.46	0.00	0.11	0.11	—	487	487	0.02	0.02	0.86	—
Vendor	0.01	0.01	0.23	0.11	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	185	185	0.01	0.03	0.22	—
Hauling	0.02	< 0.005	0.27	0.10	< 0.005	< 0.005	0.05	0.06	< 0.005	0.01	0.02	—	202	202	0.01	0.03	0.20	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.04	0.44	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	80.7	80.7	< 0.005	< 0.005	0.14	—
Vendor	< 0.005	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	30.7	30.7	< 0.005	< 0.005	0.04	—
Hauling	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	33.5	33.5	< 0.005	0.01	0.03	—

3.3. Site Preparation (2024) - Unmitigated

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

Location	TOG	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	3.80	3.19	31.5	28.8	0.04	1.40	—	1.40	1.29	—	1.29	—	4,634	4,634	0.19	0.04	—	4,650
Dust From Material Movement	—	—	—	—	—	—	17.2	17.2	—	8.84	8.84	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.47	1.47	< 0.005	0.15	0.15	—	5.17	5.17	< 0.005	< 0.005	0.01	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.80	3.19	31.5	28.8	0.04	1.40	—	1.40	1.29	—	1.29	—	4,634	4,634	0.19	0.04	—	4,650
Dust From Material Movement	—	—	—	—	—	—	17.2	17.2	—	8.84	8.84	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.47	1.47	< 0.005	0.15	0.15	—	5.19	5.19	< 0.005	< 0.005	< 0.005	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.72	2.29	22.6	20.7	0.03	1.00	—	1.00	0.92	—	0.92	—	3,326	3,326	0.13	0.03	—	3,338
Dust From Material Movement	—	—	—	—	—	—	12.3	12.3	—	6.35	6.35	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	1.00	1.00	< 0.005	0.10	0.10	—	3.72	3.72	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.50	0.42	4.12	3.77	0.01	0.18	—	0.18	0.17	—	0.17	—	551	551	0.02	< 0.005	—	553

Dust From Material Movement	—	—	—	—	—	—	2.25	2.25	—	1.16	1.16	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.18	0.18	< 0.005	0.02	0.02	—	0.62	0.62	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.10	1.51	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	282	282	0.01	0.01	1.11	—
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	0.10	0.09	0.11	1.28	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	268	268	0.01	0.01	0.03	—
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	0.07	0.06	0.08	0.96	0.00	0.00	0.19	0.19	0.00	0.04	0.04	—	195	195	0.01	0.01	0.34	—
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	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.18	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	32.3	32.3	< 0.005	< 0.005	0.06	—
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	—

3.4. Site Preparation (2024) - Mitigated

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

Location	TOG	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	0.56	0.56	12.9	24.8	0.04	0.09	—	0.09	0.09	—	0.09	—	4,634	4,634	0.19	0.04	—	4,650
Dust From Material Movement	—	—	—	—	—	—	6.71	6.71	—	3.45	3.45	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.37	0.37	< 0.005	0.04	0.04	—	5.17	5.17	< 0.005	< 0.005	0.01	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.56	0.56	12.9	24.8	0.04	0.09	—	0.09	0.09	—	0.09	—	4,634	4,634	0.19	0.04	—	4,650
Dust From Material Movement	—	—	—	—	—	—	6.71	6.71	—	3.45	3.45	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.37	0.37	< 0.005	0.04	0.04	—	5.19	5.19	< 0.005	< 0.005	< 0.005	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.40	0.40	9.25	17.8	0.03	0.06	—	0.06	0.06	—	0.06	—	3,326	3,326	0.13	0.03	—	3,338
Dust From Material Movement	—	—	—	—	—	—	4.82	4.82	—	2.47	2.47	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.25	0.25	< 0.005	0.03	0.03	—	3.72	3.72	< 0.005	< 0.005	< 0.005	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.07	1.69	3.24	0.01	0.01	—	0.01	0.01	—	0.01	—	551	551	0.02	< 0.005	—	553
Dust From Material Movement	—	—	—	—	—	—	0.88	0.88	—	0.45	0.45	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.05	0.05	< 0.005	< 0.005	< 0.005	—	0.62	0.62	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	0.10	1.51	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	282	282	0.01	0.01	1.11	—
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	0.10	0.09	0.11	1.28	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	268	268	0.01	0.01	0.03	—
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	0.07	0.06	0.08	0.96	0.00	0.00	0.19	0.19	0.00	0.04	0.04	—	195	195	0.01	0.01	0.34	—
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	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.18	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	32.3	32.3	< 0.005	< 0.005	0.06	—
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 (2024) - Unmitigated

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

Location	TOG	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	4.19	3.52	34.3	30.2	0.06	1.45	—	1.45	1.33	—	1.33	—	6,598	6,598	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	—	9.21	9.21	—	3.65	3.65	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.47	1.47	< 0.005	0.15	0.15	—	5.19	5.19	< 0.005	< 0.005	< 0.005	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.60	0.50	4.88	4.30	0.01	0.21	—	0.21	0.19	—	0.19	—	940	940	0.04	0.01	—	943
Dust From Material Movement	—	—	—	—	—	—	1.31	1.31	—	0.52	0.52	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.20	0.20	< 0.005	0.02	0.02	—	0.74	0.74	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.09	0.89	0.78	< 0.005	0.04	—	0.04	0.03	—	0.03	—	156	156	0.01	< 0.005	—	156

Dust From Material Movement	—	—	—	—	—	—	0.24	0.24	—	0.10	0.10	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.04	0.04	< 0.005	< 0.005	< 0.005	—	0.12	0.12	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.37	0.33	0.42	4.78	0.00	0.00	0.98	0.98	0.00	0.23	0.23	—	1,004	1,004	0.05	0.04	0.11	—
Vendor	0.03	0.01	0.39	0.19	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.03	—	323	323	0.01	0.04	0.02	—
Hauling	0.57	0.16	9.79	3.62	0.05	0.09	1.98	2.08	0.09	0.54	0.64	—	7,545	7,545	0.41	1.21	0.45	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.06	0.72	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	145	145	0.01	0.01	0.26	—
Vendor	< 0.005	< 0.005	0.06	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	46.0	46.0	< 0.005	0.01	0.05	—
Hauling	0.08	0.02	1.42	0.51	0.01	0.01	0.28	0.29	0.01	0.08	0.09	—	1,075	1,075	0.06	0.17	1.07	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	24.0	24.0	< 0.005	< 0.005	0.04	—
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.61	7.61	< 0.005	< 0.005	0.01	—
Hauling	0.01	< 0.005	0.26	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	178	178	0.01	0.03	0.18	—

3.6. Grading (2024) - Mitigated

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

Location	TOG	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	1.00	0.96	18.9	35.4	0.06	0.18	—	0.18	0.17	—	0.17	—	6,598	6,598	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	—	3.59	3.59	—	1.43	1.43	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.37	0.37	< 0.005	0.04	0.04	—	5.19	5.19	< 0.005	< 0.005	< 0.005	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.14	0.14	2.70	5.04	0.01	0.03	—	0.03	0.02	—	0.02	—	940	940	0.04	0.01	—	943
Dust From Material Movement	—	—	—	—	—	—	0.51	0.51	—	0.20	0.20	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	0.74	0.74	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.02	0.49	0.92	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	156	156	0.01	< 0.005	—	156
Dust From Material Movement	—	—	—	—	—	—	0.09	0.09	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.12	0.12	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.37	0.33	0.42	4.78	0.00	0.00	0.98	0.98	0.00	0.23	0.23	—	1,004	1,004	0.05	0.04	0.11	—
Vendor	0.03	0.01	0.39	0.19	< 0.005	< 0.005	0.09	0.09	< 0.005	0.02	0.03	—	323	323	0.01	0.04	0.02	—
Hauling	0.57	0.16	9.79	3.62	0.05	0.09	1.98	2.08	0.09	0.54	0.64	—	7,545	7,545	0.41	1.21	0.45	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.05	0.06	0.72	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	145	145	0.01	0.01	0.26	—
Vendor	< 0.005	< 0.005	0.06	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	46.0	46.0	< 0.005	0.01	0.05	—
Hauling	0.08	0.02	1.42	0.51	0.01	0.01	0.28	0.29	0.01	0.08	0.09	—	1,075	1,075	0.06	0.17	1.07	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.13	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	24.0	24.0	< 0.005	< 0.005	0.04	—
Vendor	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.61	7.61	< 0.005	< 0.005	0.01	—
Hauling	0.01	< 0.005	0.26	0.09	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.02	—	178	178	0.01	0.03	0.18	—

3.7. Building Construction (2025) - Unmitigated

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

Location	TOG	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	1.42	1.19	11.0	13.8	0.03	0.45	—	0.45	0.42	—	0.42	—	2,573	2,573	0.10	0.02	—	2,582

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.47	1.47	< 0.005	0.15	0.15	—	5.08	5.08	< 0.005	< 0.005	0.01	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.42	1.19	11.0	13.8	0.03	0.45	—	0.45	0.42	—	0.42	—	2,573	2,573	0.10	0.02	—	2,582
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.47	1.47	< 0.005	0.15	0.15	—	5.11	5.11	< 0.005	< 0.005	< 0.005	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.21	1.02	9.46	11.8	0.02	0.39	—	0.39	0.36	—	0.36	—	2,206	2,206	0.09	0.02	—	2,213
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.20	1.20	< 0.005	0.12	0.12	—	4.36	4.36	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.22	0.19	1.73	2.15	< 0.005	0.07	—	0.07	0.07	—	0.07	—	365	365	0.01	< 0.005	—	366
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.22	0.22	< 0.005	0.02	0.02	—	0.72	0.72	< 0.005	< 0.005	< 0.005	—

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.96	0.86	0.87	13.9	0.00	0.00	2.61	2.61	0.00	0.61	0.61	—	2,765	2,765	0.12	0.09	10.1	—
Vendor	0.04	0.02	0.63	0.31	< 0.005	0.01	0.15	0.16	< 0.005	0.04	0.04	—	551	551	0.02	0.08	1.51	—
Hauling	0.04	0.01	0.59	0.23	< 0.005	0.01	0.13	0.13	0.01	0.03	0.04	—	477	477	0.03	0.07	1.11	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.95	0.85	0.96	11.8	0.00	0.00	2.61	2.61	0.00	0.61	0.61	—	2,621	2,621	0.12	0.10	0.26	—
Vendor	0.04	0.02	0.65	0.31	< 0.005	0.01	0.15	0.16	< 0.005	0.04	0.04	—	551	551	0.02	0.08	0.04	—
Hauling	0.04	0.01	0.61	0.23	< 0.005	0.01	0.13	0.13	0.01	0.03	0.04	—	477	477	0.03	0.07	0.03	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.81	0.72	0.89	10.6	0.00	0.00	2.21	2.21	0.00	0.52	0.52	—	2,280	2,280	0.10	0.08	3.75	—
Vendor	0.03	0.01	0.56	0.26	< 0.005	0.01	0.13	0.13	< 0.005	0.03	0.04	—	473	473	0.02	0.07	0.56	—
Hauling	0.03	0.01	0.53	0.20	< 0.005	0.01	0.11	0.11	0.01	0.03	0.03	—	409	409	0.02	0.06	0.41	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.13	0.16	1.94	0.00	0.00	0.40	0.40	0.00	0.09	0.09	—	377	377	0.02	0.01	0.62	—
Vendor	0.01	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	78.2	78.2	< 0.005	0.01	0.09	—
Hauling	0.01	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	67.7	67.7	< 0.005	0.01	0.07	—

3.8. Building Construction (2025) - Mitigated

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

Location	TOG	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	0.64	0.59	9.73	16.0	0.03	0.12	—	0.12	0.11	—	0.11	—	2,573	2,573	0.10	0.02	—	2,582
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.37	0.37	< 0.005	0.04	0.04	—	5.08	5.08	< 0.005	< 0.005	0.01	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.64	0.59	9.73	16.0	0.03	0.12	—	0.12	0.11	—	0.11	—	2,573	2,573	0.10	0.02	—	2,582
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.37	0.37	< 0.005	0.04	0.04	—	5.11	5.11	< 0.005	< 0.005	< 0.005	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.55	0.50	8.34	13.7	0.02	0.10	—	0.10	0.09	—	0.09	—	2,206	2,206	0.09	0.02	—	2,213
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.30	0.30	< 0.005	0.03	0.03	—	4.36	4.36	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.09	1.52	2.50	< 0.005	0.02	—	0.02	0.02	—	0.02	—	365	365	0.01	< 0.005	—	366
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—

Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	0.72	0.72	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.96	0.86	0.87	13.9	0.00	0.00	2.61	2.61	0.00	0.61	0.61	—	2,765	2,765	0.12	0.09	10.1	—
Vendor	0.04	0.02	0.63	0.31	< 0.005	0.01	0.15	0.16	< 0.005	0.04	0.04	—	551	551	0.02	0.08	1.51	—
Hauling	0.04	0.01	0.59	0.23	< 0.005	0.01	0.13	0.13	0.01	0.03	0.04	—	477	477	0.03	0.07	1.11	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.95	0.85	0.96	11.8	0.00	0.00	2.61	2.61	0.00	0.61	0.61	—	2,621	2,621	0.12	0.10	0.26	—
Vendor	0.04	0.02	0.65	0.31	< 0.005	0.01	0.15	0.16	< 0.005	0.04	0.04	—	551	551	0.02	0.08	0.04	—
Hauling	0.04	0.01	0.61	0.23	< 0.005	0.01	0.13	0.13	0.01	0.03	0.04	—	477	477	0.03	0.07	0.03	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.81	0.72	0.89	10.6	0.00	0.00	2.21	2.21	0.00	0.52	0.52	—	2,280	2,280	0.10	0.08	3.75	—
Vendor	0.03	0.01	0.56	0.26	< 0.005	0.01	0.13	0.13	< 0.005	0.03	0.04	—	473	473	0.02	0.07	0.56	—
Hauling	0.03	0.01	0.53	0.20	< 0.005	0.01	0.11	0.11	0.01	0.03	0.03	—	409	409	0.02	0.06	0.41	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.15	0.13	0.16	1.94	0.00	0.00	0.40	0.40	0.00	0.09	0.09	—	377	377	0.02	0.01	0.62	—
Vendor	0.01	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	78.2	78.2	< 0.005	0.01	0.09	—
Hauling	0.01	< 0.005	0.10	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	67.7	67.7	< 0.005	0.01	0.07	—

3.9. Building Construction (2026) - Unmitigated

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

Location	TOG	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	1.35	1.13	10.4	13.7	0.03	0.40	—	0.40	0.37	—	0.37	—	2,573	2,573	0.10	0.02	—	2,582
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.47	1.47	< 0.005	0.15	0.15	—	4.99	4.99	< 0.005	< 0.005	0.01	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.35	1.13	10.4	13.7	0.03	0.40	—	0.40	0.37	—	0.37	—	2,573	2,573	0.10	0.02	—	2,582
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.47	1.47	< 0.005	0.15	0.15	—	5.02	5.02	< 0.005	< 0.005	< 0.005	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.16	0.97	8.93	11.7	0.02	0.34	—	0.34	0.31	—	0.31	—	2,205	2,205	0.09	0.02	—	2,213
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.20	1.20	< 0.005	0.12	0.12	—	4.29	4.29	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.21	0.18	1.63	2.14	< 0.005	0.06	—	0.06	0.06	—	0.06	—	365	365	0.01	< 0.005	—	366

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.22	0.22	< 0.005	0.02	0.02	—	0.71	0.71	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.83	0.74	0.78	12.9	0.00	0.00	2.61	2.61	0.00	0.61	0.61	—	2,710	2,710	0.11	0.09	9.17	—
Vendor	0.04	0.02	0.60	0.29	< 0.005	0.01	0.15	0.16	< 0.005	0.04	0.04	—	542	542	0.02	0.08	1.46	—
Hauling	0.03	0.01	0.56	0.22	< 0.005	0.01	0.13	0.13	0.01	0.03	0.04	—	468	468	0.03	0.07	1.05	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.83	0.73	0.87	11.0	0.00	0.00	2.61	2.61	0.00	0.61	0.61	—	2,569	2,569	0.12	0.09	0.24	—
Vendor	0.04	0.02	0.62	0.30	< 0.005	0.01	0.15	0.16	< 0.005	0.04	0.04	—	542	542	0.02	0.08	0.04	—
Hauling	0.03	0.01	0.59	0.22	< 0.005	0.01	0.13	0.13	0.01	0.03	0.04	—	469	469	0.03	0.07	0.03	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.71	0.62	0.81	9.89	0.00	0.00	2.21	2.21	0.00	0.52	0.52	—	2,234	2,234	0.10	0.08	3.40	—
Vendor	0.03	0.01	0.54	0.25	< 0.005	0.01	0.13	0.13	< 0.005	0.03	0.04	—	464	464	0.02	0.07	0.54	—
Hauling	0.03	0.01	0.51	0.19	< 0.005	0.01	0.11	0.11	0.01	0.03	0.03	—	401	401	0.02	0.06	0.39	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.11	0.15	1.80	0.00	0.00	0.40	0.40	0.00	0.09	0.09	—	370	370	0.02	0.01	0.56	—
Vendor	0.01	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	76.9	76.9	< 0.005	0.01	0.09	—
Hauling	0.01	< 0.005	0.09	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	66.5	66.5	< 0.005	0.01	0.06	—

3.10. Building Construction (2026) - Mitigated

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

Location	TOG	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	0.63	0.57	9.68	15.9	0.03	0.11	—	0.11	0.10	—	0.10	—	2,573	2,573	0.10	0.02	—	2,582
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.37	0.37	< 0.005	0.04	0.04	—	4.99	4.99	< 0.005	< 0.005	0.01	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.63	0.57	9.68	15.9	0.03	0.11	—	0.11	0.10	—	0.10	—	2,573	2,573	0.10	0.02	—	2,582
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.37	0.37	< 0.005	0.04	0.04	—	5.02	5.02	< 0.005	< 0.005	< 0.005	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	0.49	8.30	13.7	0.02	0.09	—	0.09	0.09	—	0.09	—	2,205	2,205	0.09	0.02	—	2,213
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.30	0.30	< 0.005	0.03	0.03	—	4.29	4.29	< 0.005	< 0.005	< 0.005	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.09	1.51	2.49	< 0.005	0.02	—	0.02	0.02	—	0.02	—	365	365	0.01	< 0.005	—	366
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	0.71	0.71	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.83	0.74	0.78	12.9	0.00	0.00	2.61	2.61	0.00	0.61	0.61	—	2,710	2,710	0.11	0.09	9.17	—
Vendor	0.04	0.02	0.60	0.29	< 0.005	0.01	0.15	0.16	< 0.005	0.04	0.04	—	542	542	0.02	0.08	1.46	—
Hauling	0.03	0.01	0.56	0.22	< 0.005	0.01	0.13	0.13	0.01	0.03	0.04	—	468	468	0.03	0.07	1.05	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.83	0.73	0.87	11.0	0.00	0.00	2.61	2.61	0.00	0.61	0.61	—	2,569	2,569	0.12	0.09	0.24	—
Vendor	0.04	0.02	0.62	0.30	< 0.005	0.01	0.15	0.16	< 0.005	0.04	0.04	—	542	542	0.02	0.08	0.04	—
Hauling	0.03	0.01	0.59	0.22	< 0.005	0.01	0.13	0.13	0.01	0.03	0.04	—	469	469	0.03	0.07	0.03	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.71	0.62	0.81	9.89	0.00	0.00	2.21	2.21	0.00	0.52	0.52	—	2,234	2,234	0.10	0.08	3.40	—
Vendor	0.03	0.01	0.54	0.25	< 0.005	0.01	0.13	0.13	< 0.005	0.03	0.04	—	464	464	0.02	0.07	0.54	—
Hauling	0.03	0.01	0.51	0.19	< 0.005	0.01	0.11	0.11	0.01	0.03	0.03	—	401	401	0.02	0.06	0.39	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.13	0.11	0.15	1.80	0.00	0.00	0.40	0.40	0.00	0.09	0.09	—	370	370	0.02	0.01	0.56	—
Vendor	0.01	< 0.005	0.10	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	76.9	76.9	< 0.005	0.01	0.09	—
Hauling	0.01	< 0.005	0.09	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	66.5	66.5	< 0.005	0.01	0.06	—

3.11. Building Construction (2027) - Unmitigated

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

Location	TOG	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	1.30	1.09	9.94	13.6	0.03	0.35	—	0.35	0.33	—	0.33	—	2,573	2,573	0.10	0.02	—	2,581
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.47	1.47	< 0.005	0.15	0.15	—	4.90	4.90	< 0.005	< 0.005	0.01	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.30	1.09	9.94	13.6	0.03	0.35	—	0.35	0.33	—	0.33	—	2,573	2,573	0.10	0.02	—	2,581
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.47	1.47	< 0.005	0.15	0.15	—	4.93	4.93	< 0.005	< 0.005	< 0.005	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.65	0.54	4.95	6.80	0.01	0.18	—	0.18	0.16	—	0.16	—	1,281	1,281	0.05	0.01	—	1,285
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—

Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.70	0.70	< 0.005	0.07	0.07	—	2.45	2.45	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.10	0.90	1.24	< 0.005	0.03	—	0.03	0.03	—	0.03	—	212	212	0.01	< 0.005	—	213
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.13	0.13	< 0.005	0.01	0.01	—	0.40	0.40	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.80	0.71	0.69	12.0	0.00	0.00	2.61	2.61	0.00	0.61	0.61	—	2,658	2,658	0.11	0.09	8.28	—
Vendor	0.03	0.02	0.57	0.27	< 0.005	< 0.005	0.15	0.15	< 0.005	0.04	0.04	—	531	531	0.02	0.07	1.39	—
Hauling	0.03	0.01	0.54	0.22	< 0.005	0.01	0.13	0.13	0.01	0.03	0.04	—	459	459	0.02	0.07	0.98	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.80	0.70	0.86	10.2	0.00	0.00	2.61	2.61	0.00	0.61	0.61	—	2,520	2,520	0.04	0.09	0.21	—
Vendor	0.03	0.02	0.59	0.28	< 0.005	< 0.005	0.15	0.15	< 0.005	0.04	0.04	—	531	531	0.02	0.07	0.04	—
Hauling	0.03	0.01	0.57	0.22	< 0.005	0.01	0.13	0.13	0.01	0.03	0.04	—	459	459	0.02	0.07	0.03	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.40	0.35	0.43	5.33	0.00	0.00	1.29	1.29	0.00	0.30	0.30	—	1,273	1,273	0.02	0.05	1.78	—
Vendor	0.02	0.01	0.30	0.14	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	265	265	0.01	0.04	0.30	—
Hauling	0.02	< 0.005	0.29	0.11	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	229	229	0.01	0.04	0.21	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.08	0.97	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	211	211	< 0.005	0.01	0.29	—
Vendor	< 0.005	< 0.005	0.05	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	43.8	43.8	< 0.005	0.01	0.05	—

Hauling	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	37.8	37.8	< 0.005	0.01	0.03	—

3.12. Building Construction (2027) - Mitigated

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

Location	TOG	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	0.62	0.56	9.64	15.9	0.03	0.10	—	0.10	0.10	—	0.10	—	2,573	2,573	0.10	0.02	—	2,581
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.37	0.37	< 0.005	0.04	0.04	—	4.90	4.90	< 0.005	< 0.005	0.01	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.62	0.56	9.64	15.9	0.03	0.10	—	0.10	0.10	—	0.10	—	2,573	2,573	0.10	0.02	—	2,581
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.37	0.37	< 0.005	0.04	0.04	—	4.93	4.93	< 0.005	< 0.005	< 0.005	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31	0.28	4.80	7.93	0.01	0.05	—	0.05	0.05	—	0.05	—	1,281	1,281	0.05	0.01	—	1,285

Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.18	0.18	< 0.005	0.02	0.02	—	2.45	2.45	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.05	0.88	1.45	< 0.005	0.01	—	0.01	0.01	—	0.01	—	212	212	0.01	< 0.005	—	213
Dust From Material Movement	—	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	0.40	0.40	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.80	0.71	0.69	12.0	0.00	0.00	2.61	2.61	0.00	0.61	0.61	—	2,658	2,658	0.11	0.09	8.28	—
Vendor	0.03	0.02	0.57	0.27	< 0.005	< 0.005	0.15	0.15	< 0.005	0.04	0.04	—	531	531	0.02	0.07	1.39	—
Hauling	0.03	0.01	0.54	0.22	< 0.005	0.01	0.13	0.13	0.01	0.03	0.04	—	459	459	0.02	0.07	0.98	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.80	0.70	0.86	10.2	0.00	0.00	2.61	2.61	0.00	0.61	0.61	—	2,520	2,520	0.04	0.09	0.21	—
Vendor	0.03	0.02	0.59	0.28	< 0.005	< 0.005	0.15	0.15	< 0.005	0.04	0.04	—	531	531	0.02	0.07	0.04	—
Hauling	0.03	0.01	0.57	0.22	< 0.005	0.01	0.13	0.13	0.01	0.03	0.04	—	459	459	0.02	0.07	0.03	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.40	0.35	0.43	5.33	0.00	0.00	1.29	1.29	0.00	0.30	0.30	—	1,273	1,273	0.02	0.05	1.78	—
Vendor	0.02	0.01	0.30	0.14	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	265	265	0.01	0.04	0.30	—
Hauling	0.02	< 0.005	0.29	0.11	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	229	229	0.01	0.04	0.21	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.08	0.97	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	211	211	< 0.005	0.01	0.29	—
Vendor	< 0.005	< 0.005	0.05	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	43.8	43.8	< 0.005	0.01	0.05	—
Hauling	< 0.005	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	37.8	37.8	< 0.005	0.01	0.03	—

3.13. Paving (2027) - Unmitigated

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

Location	TOG	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	0.77	0.65	6.08	8.71	0.01	0.26	—	0.26	0.24	—	0.24	—	1,322	1,322	0.05	0.01	—	1,327
Paving	—	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.47	1.47	< 0.005	0.15	0.15	—	4.90	4.90	< 0.005	< 0.005	0.01	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.77	0.65	6.08	8.71	0.01	0.26	—	0.26	0.24	—	0.24	—	1,322	1,322	0.05	0.01	—	1,327
Paving	—	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.47	1.47	< 0.005	0.15	0.15	—	4.93	4.93	< 0.005	< 0.005	< 0.005	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.39	0.33	3.06	4.39	0.01	0.13	—	0.13	0.12	—	0.12	—	667	667	0.03	0.01	—	669
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.70	0.70	< 0.005	0.07	0.07	—	2.48	2.48	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.06	0.56	0.80	< 0.005	0.02	—	0.02	0.02	—	0.02	—	110	110	< 0.005	< 0.005	—	111
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.13	0.13	< 0.005	0.01	0.01	—	0.41	0.41	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.05	0.90	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	199	199	0.01	0.01	0.62	—
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	0.06	0.05	0.06	0.76	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	189	189	< 0.005	0.01	0.02	—
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	0.03	0.03	0.03	0.40	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	96.7	96.7	< 0.005	< 0.005	0.13	—
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	0.01	< 0.005	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	16.0	16.0	< 0.005	< 0.005	0.02	—
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	—

3.14. Paving (2027) - Mitigated

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

Location	TOG	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	0.43	0.39	5.89	9.28	0.01	0.08	—	0.08	0.08	—	0.08	—	1,322	1,322	0.05	0.01	—	1,327
Paving	—	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.37	0.37	< 0.005	0.04	0.04	—	4.90	4.90	< 0.005	< 0.005	0.01	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.43	0.39	5.89	9.28	0.01	0.08	—	0.08	0.08	—	0.08	—	1,322	1,322	0.05	0.01	—	1,327
Paving	—	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.37	0.37	< 0.005	0.04	0.04	—	4.93	4.93	< 0.005	< 0.005	< 0.005	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.22	0.19	2.97	4.68	0.01	0.04	—	0.04	0.04	—	0.04	—	667	667	0.03	0.01	—	669
Paving	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	0.18	0.18	< 0.005	0.02	0.02	—	2.48	2.48	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.04	0.54	0.85	< 0.005	0.01	—	0.01	0.01	—	0.01	—	110	110	< 0.005	< 0.005	—	111
Paving	—	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	0.41	0.41	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.05	0.05	0.90	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	199	199	0.01	0.01	0.62	—
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	0.06	0.05	0.06	0.76	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	189	189	< 0.005	0.01	0.02	—
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	0.03	0.03	0.03	0.40	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	96.7	96.7	< 0.005	< 0.005	0.13	—
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	0.01	< 0.005	0.01	0.07	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	16.0	16.0	< 0.005	< 0.005	0.02	—
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	—

3.15. Architectural Coating (2026) - Unmitigated

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

Location	TOG	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	0.19	0.16	1.14	1.51	< 0.005	0.03	—	0.03	0.03	—	0.03	—	178	178	0.01	< 0.005	—	179
Architectural Coatings	—	7.39	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	1.47	1.47	< 0.005	0.15	0.15	—	4.99	4.99	< 0.005	< 0.005	0.01	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.25	0.33	< 0.005	0.01	—	0.01	0.01	—	0.01	—	38.5	38.5	< 0.005	< 0.005	—	38.7
Architectural Coatings	—	1.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.30	0.30	< 0.005	0.03	0.03	—	1.08	1.08	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.38	6.38	< 0.005	< 0.005	—	6.40
Architectural Coatings	—	0.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.06	0.06	< 0.005	0.01	0.01	—	0.18	0.18	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.08	1.29	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	271	271	0.01	0.01	0.92	—

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	0.02	0.02	0.02	0.25	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	56.4	56.4	< 0.005	< 0.005	0.09	—
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	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.34	9.34	< 0.005	< 0.005	0.01	—
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	—

3.16. Architectural Coating (2026) - Mitigated

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

Location	TOG	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	0.19	0.16	1.14	1.51	< 0.005	0.03	—	0.03	0.03	—	0.03	—	178	178	0.01	< 0.005	—	179
Architectural Coatings	—	7.39	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	0.37	0.37	< 0.005	0.04	0.04	—	4.99	4.99	< 0.005	< 0.005	0.01	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.03	0.25	0.33	< 0.005	0.01	—	0.01	0.01	—	0.01	—	38.5	38.5	< 0.005	< 0.005	—	38.7
Architectural Coatings	—	1.60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.08	0.08	< 0.005	0.01	0.01	—	1.08	1.08	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.05	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.38	6.38	< 0.005	< 0.005	—	6.40
Architectural Coatings	—	0.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.18	0.18	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.08	1.29	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	271	271	0.01	0.01	0.92	—
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	0.02	0.02	0.02	0.25	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	56.4	56.4	< 0.005	< 0.005	0.09	—

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	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	9.34	9.34	< 0.005	< 0.005	0.01	—
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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00
Library	5.38	4.94	3.15	36.7	0.09	0.05	8.28	8.34	0.05	2.10	2.15	—	8,933	8,933	0.45	0.37	24.6	9,078
City Park	0.04	0.04	0.02	0.28	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	68.7	68.7	< 0.005	< 0.005	0.19	69.8
Total	5.42	4.98	3.17	37.0	0.09	0.05	8.35	8.40	0.05	2.12	2.17	—	9,001	9,001	0.46	0.37	24.8	9,147
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00
Library	5.33	4.89	3.44	34.3	0.08	0.05	8.28	8.34	0.05	2.10	2.15	—	8,566	8,566	0.48	0.38	0.64	8,693
City Park	0.04	0.04	0.03	0.26	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	65.9	65.9	< 0.005	< 0.005	< 0.005	66.8
Total	5.37	4.92	3.46	34.6	0.08	0.05	8.35	8.40	0.05	2.12	2.17	—	8,632	8,632	0.48	0.39	0.64	8,760
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00
Library	0.88	0.81	0.58	5.83	0.01	0.01	1.36	1.37	0.01	0.35	0.35	—	1,308	1,308	0.07	0.06	1.60	1,329
City Park	< 0.005	< 0.005	< 0.005	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	5.79	5.79	< 0.005	< 0.005	0.01	5.88
Total	0.88	0.81	0.58	5.86	0.01	0.01	1.37	1.38	0.01	0.35	0.36	—	1,314	1,314	0.07	0.06	1.61	1,335

4.1.2. Mitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00
Library	5.38	4.94	3.15	36.7	0.09	0.05	8.28	8.34	0.05	2.10	2.15	—	8,933	8,933	0.45	0.37	24.6	9,078
City Park	0.04	0.04	0.02	0.28	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	68.7	68.7	< 0.005	< 0.005	0.19	69.8

Total	5.42	4.98	3.17	37.0	0.09	0.05	8.35	8.40	0.05	2.12	2.17	—	9,001	9,001	0.46	0.37	24.8	9,147
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00
Library	5.33	4.89	3.44	34.3	0.08	0.05	8.28	8.34	0.05	2.10	2.15	—	8,566	8,566	0.48	0.38	0.64	8,693
City Park	0.04	0.04	0.03	0.26	< 0.005	< 0.005	0.06	0.06	< 0.005	0.02	0.02	—	65.9	65.9	< 0.005	< 0.005	< 0.005	66.8
Total	5.37	4.92	3.46	34.6	0.08	0.05	8.35	8.40	0.05	2.12	2.17	—	8,632	8,632	0.48	0.39	0.64	8,760
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00
Library	0.88	0.81	0.58	5.83	0.01	0.01	1.36	1.37	0.01	0.35	0.35	—	1,308	1,308	0.07	0.06	1.60	1,329
City Park	< 0.005	< 0.005	< 0.005	0.03	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	5.79	5.79	< 0.005	< 0.005	0.01	5.88
Total	0.88	0.81	0.58	5.86	0.01	0.01	1.37	1.38	0.01	0.35	0.36	—	1,314	1,314	0.07	0.06	1.61	1,335

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

Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	134	134	0.01	< 0.005	—	135
Library	—	—	—	—	—	—	—	—	—	—	—	—	1,942	1,942	0.14	0.02	—	1,951
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	2,076	2,076	0.15	0.02	—	2,086
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	134	134	0.01	< 0.005	—	135
Library	—	—	—	—	—	—	—	—	—	—	—	—	1,942	1,942	0.14	0.02	—	1,951
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	2,076	2,076	0.15	0.02	—	2,086
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	22.2	22.2	< 0.005	< 0.005	—	22.3
Library	—	—	—	—	—	—	—	—	—	—	—	—	322	322	0.02	< 0.005	—	323
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	344	344	0.02	< 0.005	—	345

4.2.2. Electricity Emissions By Land Use - Mitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	134	134	0.01	< 0.005	—	135
Library	—	—	—	—	—	—	—	—	—	—	—	—	1,942	1,942	0.14	0.02	—	1,951
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	2,076	2,076	0.15	0.02	—	2,086
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	134	134	0.01	< 0.005	—	135
Library	—	—	—	—	—	—	—	—	—	—	—	—	1,942	1,942	0.14	0.02	—	1,951
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	2,076	2,076	0.15	0.02	—	2,086
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	—	22.2	22.2	< 0.005	< 0.005	—	22.3
Library	—	—	—	—	—	—	—	—	—	—	—	—	322	322	0.02	< 0.005	—	323
City Park	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	344	344	0.02	< 0.005	—	345

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	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	—	0.00
Library	0.33	0.17	3.02	2.54	0.02	0.23	—	0.23	0.23	—	0.23	—	3,601	3,601	0.32	0.01	—	3,611
City Park	0.00	0.00	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	0.33	0.17	3.02	2.54	0.02	0.23	—	0.23	0.23	—	0.23	—	3,601	3,601	0.32	0.01	—	3,611
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	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	—	0.00
Library	0.33	0.17	3.02	2.54	0.02	0.23	—	0.23	0.23	—	0.23	—	3,601	3,601	0.32	0.01	—	3,611
City Park	0.00	0.00	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	0.33	0.17	3.02	2.54	0.02	0.23	—	0.23	0.23	—	0.23	—	3,601	3,601	0.32	0.01	—	3,611
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	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	—	0.00

Library	0.06	0.03	0.55	0.46	< 0.005	0.04	—	0.04	0.04	—	0.04	—	596	596	0.05	< 0.005	—	598
City Park	0.00	0.00	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	0.06	0.03	0.55	0.46	< 0.005	0.04	—	0.04	0.04	—	0.04	—	596	596	0.05	< 0.005	—	598

4.2.4. Natural Gas Emissions By Land Use - Mitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	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	—	0.00
Library	0.33	0.17	3.02	2.54	0.02	0.23	—	0.23	0.23	—	0.23	—	3,601	3,601	0.32	0.01	—	3,611
City Park	0.00	0.00	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	0.33	0.17	3.02	2.54	0.02	0.23	—	0.23	0.23	—	0.23	—	3,601	3,601	0.32	0.01	—	3,611
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	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	—	0.00
Library	0.33	0.17	3.02	2.54	0.02	0.23	—	0.23	0.23	—	0.23	—	3,601	3,601	0.32	0.01	—	3,611
City Park	0.00	0.00	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	0.33	0.17	3.02	2.54	0.02	0.23	—	0.23	0.23	—	0.23	—	3,601	3,601	0.32	0.01	—	3,611
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Other Non-Asphalt Surfaces	0.00	0.00	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	—	0.00
Library	0.06	0.03	0.55	0.46	< 0.005	0.04	—	0.04	0.04	—	0.04	—	596	596	0.05	< 0.005	—	598
City Park	0.00	0.00	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	0.06	0.03	0.55	0.46	< 0.005	0.04	—	0.04	0.04	—	0.04	—	596	596	0.05	< 0.005	—	598

4.3. Area Emissions by Source

4.3.1. Unmitigated

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

Source	TOG	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	—	2.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	2.59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	2.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	2.59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.42	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.3.2. Mitigated

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

Source	TOG	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	—	2.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	2.59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	2.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.30	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	2.59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.42	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.47	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	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
Library	—	—	—	—	—	—	—	—	—	—	—	6.36	42.7	49.1	0.65	0.02	—	70.2
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Total	—	—	—	—	—	—	—	—	—	—	—	6.36	42.7	49.1	0.65	0.02	—	70.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	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
Library	—	—	—	—	—	—	—	—	—	—	—	6.36	42.7	49.1	0.65	0.02	—	70.2
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Total	—	—	—	—	—	—	—	—	—	—	—	6.36	42.7	49.1	0.65	0.02	—	70.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	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
Library	—	—	—	—	—	—	—	—	—	—	—	1.05	7.07	8.12	0.11	< 0.005	—	11.6
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Total	—	—	—	—	—	—	—	—	—	—	—	1.05	7.07	8.12	0.11	< 0.005	—	11.6

4.4.2. Mitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	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
Library	—	—	—	—	—	—	—	—	—	—	—	6.36	42.7	49.1	0.65	0.02	—	70.2
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Total	—	—	—	—	—	—	—	—	—	—	—	6.36	42.7	49.1	0.65	0.02	—	70.2

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	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
Library	—	—	—	—	—	—	—	—	—	—	—	6.36	42.7	49.1	0.65	0.02	—	70.2
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Total	—	—	—	—	—	—	—	—	—	—	—	6.36	42.7	49.1	0.65	0.02	—	70.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	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
Library	—	—	—	—	—	—	—	—	—	—	—	1.05	7.07	8.12	0.11	< 0.005	—	11.6
City Park	—	—	—	—	—	—	—	—	—	—	—	0.00	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005
Total	—	—	—	—	—	—	—	—	—	—	—	1.05	7.07	8.12	0.11	< 0.005	—	11.6

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

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

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

Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	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
Library	—	—	—	—	—	—	—	—	—	—	—	52.6	0.00	52.6	5.26	0.00	—	184
City Park	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.97
Total	—	—	—	—	—	—	—	—	—	—	—	52.9	0.00	52.9	5.29	0.00	—	185
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	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
Library	—	—	—	—	—	—	—	—	—	—	—	52.6	0.00	52.6	5.26	0.00	—	184
City Park	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.97
Total	—	—	—	—	—	—	—	—	—	—	—	52.9	0.00	52.9	5.29	0.00	—	185
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	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
Library	—	—	—	—	—	—	—	—	—	—	—	8.71	0.00	8.71	0.87	0.00	—	30.5
City Park	—	—	—	—	—	—	—	—	—	—	—	0.05	0.00	0.05	< 0.005	0.00	—	0.16
Total	—	—	—	—	—	—	—	—	—	—	—	8.76	0.00	8.76	0.88	0.00	—	30.6

4.5.2. Mitigated

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

Land Use	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	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
Library	—	—	—	—	—	—	—	—	—	—	—	52.6	0.00	52.6	5.26	0.00	—	184
City Park	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.97
Total	—	—	—	—	—	—	—	—	—	—	—	52.9	0.00	52.9	5.29	0.00	—	185
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	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
Library	—	—	—	—	—	—	—	—	—	—	—	52.6	0.00	52.6	5.26	0.00	—	184
City Park	—	—	—	—	—	—	—	—	—	—	—	0.28	0.00	0.28	0.03	0.00	—	0.97
Total	—	—	—	—	—	—	—	—	—	—	—	52.9	0.00	52.9	5.29	0.00	—	185
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	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
Library	—	—	—	—	—	—	—	—	—	—	—	8.71	0.00	8.71	0.87	0.00	—	30.5
City Park	—	—	—	—	—	—	—	—	—	—	—	0.05	0.00	0.05	< 0.005	0.00	—	0.16
Total	—	—	—	—	—	—	—	—	—	—	—	8.76	0.00	8.76	0.88	0.00	—	30.6

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Library	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.41	0.41
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.41	0.41
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Library	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.41	0.41
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.41	0.41
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Library	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07	0.07
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07	0.07

4.6.2. Mitigated

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

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

Library	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.41	0.41
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.41	0.41
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Library	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.41	0.41
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.41	0.41
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Library	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07	0.07
City Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07	0.07

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Forklifts	0.04	0.03	0.29	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	76.2	76.2	< 0.005	< 0.005	—	—
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	76.5
Total	0.04	0.03	0.29	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	76.2	76.2	< 0.005	< 0.005	—	76.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Forklifts	0.04	0.03	0.29	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	76.2	76.2	< 0.005	< 0.005	—	—
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	76.5
Total	0.04	0.03	0.29	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	76.2	76.2	< 0.005	< 0.005	—	76.5
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Forklifts	< 0.005	< 0.005	0.04	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.99	8.99	< 0.005	< 0.005	—	—
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.02
Total	< 0.005	< 0.005	0.04	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.99	8.99	< 0.005	< 0.005	—	9.02

4.7.2. Mitigated

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

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Forklifts	0.04	0.03	0.29	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	76.2	76.2	< 0.005	< 0.005	—	—
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	76.5
Total	0.04	0.03	0.29	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	76.2	76.2	< 0.005	< 0.005	—	76.5
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Forklifts	0.04	0.03	0.29	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	76.2	76.2	< 0.005	< 0.005	—	—
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	76.5
Total	0.04	0.03	0.29	0.52	< 0.005	0.01	—	0.01	0.01	—	0.01	—	76.2	76.2	< 0.005	< 0.005	—	76.5
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Forklifts	< 0.005	< 0.005	0.04	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.99	8.99	< 0.005	< 0.005	—	—

undefine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.02
Total	< 0.005	< 0.005	0.04	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.99	8.99	< 0.005	< 0.005	—	9.02

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	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.92	0.84	2.73	3.04	< 0.005	0.12	—	0.12	0.12	—	0.12	—	428	428	0.02	< 0.005	—	—
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	430
Total	0.92	0.84	2.73	3.04	< 0.005	0.12	—	0.12	0.12	—	0.12	—	428	428	0.02	< 0.005	—	430
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.92	0.84	2.73	3.04	< 0.005	0.12	—	0.12	0.12	—	0.12	—	428	428	0.02	< 0.005	—	—
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	430
Total	0.92	0.84	2.73	3.04	< 0.005	0.12	—	0.12	0.12	—	0.12	—	428	428	0.02	< 0.005	—	430
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Emergency Generato	0.05	0.04	0.14	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	19.4	19.4	< 0.005	< 0.005	—	—
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19.5
Total	0.05	0.04	0.14	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	19.4	19.4	< 0.005	< 0.005	—	19.5

4.8.2. Mitigated

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

Equipment Type	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.92	0.84	2.73	3.04	< 0.005	0.12	—	0.12	0.12	—	0.12	—	428	428	0.02	< 0.005	—	—
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	430
Total	0.92	0.84	2.73	3.04	< 0.005	0.12	—	0.12	0.12	—	0.12	—	428	428	0.02	< 0.005	—	430
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.92	0.84	2.73	3.04	< 0.005	0.12	—	0.12	0.12	—	0.12	—	428	428	0.02	< 0.005	—	—
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	430
Total	0.92	0.84	2.73	3.04	< 0.005	0.12	—	0.12	0.12	—	0.12	—	428	428	0.02	< 0.005	—	430
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Emergency	0.05	0.04	0.14	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	19.4	19.4	< 0.005	< 0.005	—	—
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19.5
Total	0.05	0.04	0.14	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	19.4	19.4	< 0.005	< 0.005	—	19.5

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	TOG	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

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

Equipment Type	TOG	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	TOG	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	TOG	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	TOG	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequest	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

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

Vegetation	TOG	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

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

Land Use	TOG	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

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

Species	TOG	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	1/1/2024	10/31/2024	6.00	262	—
Site Preparation	Site Preparation	1/1/2024	10/31/2024	6.00	262	—
Grading	Grading	11/1/2024	12/31/2024	6.00	52.0	—
Building Construction	Building Construction	1/1/2025	7/31/2027	6.00	808	—
Paving	Paving	6/1/2027	12/31/2027	6.00	184	—
Architectural Coating	Architectural Coating	7/1/2026	9/30/2026	6.00	79.0	—

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	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Demolition	Excavators	Diesel	Average	3.00	7.00	36.0	0.38
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	7.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	7.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Building Construction	Forklifts	Diesel	Average	3.00	7.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Average	1.00	8.00	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45

Building Construction	Tractors/Loaders/Backh	Diesel	Average	3.00	8.00	84.0	0.37
Paving	Pavers	Diesel	Average	2.00	7.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	7.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	7.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	8.00	37.0	0.48

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Rubber Tired Dozers	Diesel	Tier 4 Interim	2.00	8.00	367	0.40
Demolition	Excavators	Diesel	Average	3.00	7.00	36.0	0.38
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Site Preparation	Rubber Tired Dozers	Diesel	Tier 4 Interim	3.00	7.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	4.00	7.00	84.0	0.37
Grading	Graders	Diesel	Tier 4 Interim	1.00	8.00	148	0.41
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	2.00	8.00	84.0	0.37
Grading	Scrapers	Diesel	Tier 4 Interim	2.00	8.00	423	0.48
Grading	Rubber Tired Dozers	Diesel	Tier 4 Interim	1.00	8.00	367	0.40
Building Construction	Forklifts	Diesel	Tier 4 Interim	3.00	7.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Cranes	Diesel	Tier 4 Interim	1.00	8.00	367	0.29
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Building Construction	Tractors/Loaders/Backhoes	Diesel	Tier 4 Interim	3.00	8.00	84.0	0.37
Paving	Pavers	Diesel	Tier 4 Interim	2.00	7.00	81.0	0.42
Paving	Paving Equipment	Diesel	Tier 4 Interim	2.00	7.00	89.0	0.36

Paving	Rollers	Diesel	Average	2.00	7.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	8.00	37.0	0.48

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	50.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	8.00	10.2	HHDT,MHDT
Demolition	Hauling	4.00	20.0	HHDT
Demolition	Onsite truck	1.00	1.00	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	20.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	0.00	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	1.00	1.00	HHDT
Grading	—	—	—	—
Grading	Worker	75.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	10.0	10.2	HHDT,MHDT
Grading	Hauling	107	20.0	HHDT
Grading	Onsite truck	1.00	1.00	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	200	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	17.4	10.2	HHDT,MHDT
Building Construction	Hauling	6.88	20.0	HHDT
Building Construction	Onsite truck	1.00	1.00	HHDT

Paving	—	—	—	—
Paving	Worker	15.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	0.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	1.00	1.00	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	20.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	1.00	1.00	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	50.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	8.00	10.2	HHDT,MHDT
Demolition	Hauling	4.00	20.0	HHDT
Demolition	Onsite truck	1.00	1.00	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	20.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	0.00	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	1.00	1.00	HHDT
Grading	—	—	—	—
Grading	Worker	75.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	10.0	10.2	HHDT,MHDT
Grading	Hauling	107	20.0	HHDT

Grading	Onsite truck	1.00	1.00	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	200	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	17.4	10.2	HHDT,MHDT
Building Construction	Hauling	6.88	20.0	HHDT
Building Construction	Onsite truck	1.00	1.00	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	0.00	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	1.00	1.00	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	20.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	0.00	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	1.00	1.00	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	168,945	56,315	13,260

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	102,000	—
Site Preparation	0.00	0.00	393	0.00	—
Grading	30,000	14,500	156	0.00	—
Building Construction	6,000	38,500	50.0	0.00	—
Paving	0.00	0.00	0.00	0.00	5.07

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Other Non-Asphalt Surfaces	3.21	0%
Parking Lot	1.86	100%
Library	0.00	0%
Library	0.00	0%
Library	0.00	0%
City Park	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	690	0.05	0.01
2025	0.00	690	0.05	0.01
2026	0.00	690	0.05	0.01

2027	0.00	690	0.05	0.01

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
Other Non-Asphalt Surfaces	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
Library	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Library	1,600	1,709	1,200	568,814	10,936	11,681	8,200	3,887,845
Library	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
City Park	4.68	11.8	13.1	2,519	32.0	80.4	89.8	17,214

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Other Non-Asphalt Surfaces	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
Library	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Library	1,600	1,709	1,200	568,814	10,936	11,681	8,200	3,887,845
Library	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
City Park	4.68	11.8	13.1	2,519	32.0	80.4	89.8	17,214

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

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	168,945	56,315	13,260

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

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)
Other Non-Asphalt Surfaces	0.00	690	0.0489	0.0069	0.00
Parking Lot	70,956	690	0.0489	0.0069	0.00
Library	619,919	690	0.0489	0.0069	2,261,536

Library	387,449	690	0.0489	0.0069	1,413,460
Library	19,372	690	0.0489	0.0069	70,673
City Park	0.00	690	0.0489	0.0069	0.00

5.11.2. Mitigated

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)
Other Non-Asphalt Surfaces	0.00	690	0.0489	0.0069	0.00
Parking Lot	70,956	690	0.0489	0.0069	0.00
Library	619,919	690	0.0489	0.0069	2,261,536
Library	387,449	690	0.0489	0.0069	1,413,460
Library	19,372	690	0.0489	0.0069	70,673
City Park	0.00	690	0.0489	0.0069	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Other Non-Asphalt Surfaces	0.00	0.00
Parking Lot	0.00	0.00
Library	2,002,490	0.00
Library	1,251,556	0.00
Library	62,578	0.00
City Park	0.00	187

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)

Other Non-Asphalt Surfaces	0.00	0.00
Parking Lot	0.00	0.00
Library	2,002,490	0.00
Library	1,251,556	0.00
Library	62,578	0.00
City Park	0.00	187

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Other Non-Asphalt Surfaces	0.00	—
Parking Lot	0.00	—
Library	58.9	—
Library	36.8	—
Library	1.84	—
City Park	0.52	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Other Non-Asphalt Surfaces	0.00	—
Parking Lot	0.00	—
Library	58.9	—
Library	36.8	—
Library	1.84	—
City Park	0.52	—

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
Library	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
Library	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Library	Stand-alone retail refrigerators and freezers	R-134a	1,430	< 0.005	1.00	0.00	1.00
Library	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Library	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
Library	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Library	Stand-alone retail refrigerators and freezers	R-134a	1,430	< 0.005	1.00	0.00	1.00
Library	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Library	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
Library	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Library	Stand-alone retail refrigerators and freezers	R-134a	1,430	< 0.005	1.00	0.00	1.00
Library	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0

City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Library	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
Library	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Library	Stand-alone retail refrigerators and freezers	R-134a	1,430	< 0.005	1.00	0.00	1.00
Library	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Library	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
Library	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Library	Stand-alone retail refrigerators and freezers	R-134a	1,430	< 0.005	1.00	0.00	1.00
Library	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0
Library	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
Library	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
Library	Stand-alone retail refrigerators and freezers	R-134a	1,430	< 0.005	1.00	0.00	1.00
Library	Walk-in refrigerators and freezers	R-404A	3,922	< 0.005	7.50	7.50	20.0

City Park	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
City Park	Stand-alone retail refrigerators and freezers	R-134a	1,430	0.04	1.00	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Forklifts	Diesel	Average	1.00	4.00	82.0	0.20

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Forklifts	Diesel	Average	1.00	4.00	82.0	0.20

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
Emergency Generator	Diesel	3.00	2.00	200	85.0	0.73

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	7.38	annual days of extreme heat
Extreme Precipitation	6.85	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A

Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract

Exposure Indicators	—
AQ-Ozone	51.9
AQ-PM	67.1
AQ-DPM	59.2
Drinking Water	92.5
Lead Risk Housing	62.6
Pesticides	0.00
Toxic Releases	75.7
Traffic	70.7
Effect Indicators	—
CleanUp Sites	4.12
Groundwater	26.2
Haz Waste Facilities/Generators	89.7
Impaired Water Bodies	0.00
Solid Waste	0.00
Sensitive Population	—
Asthma	28.0
Cardio-vascular	49.2
Low Birth Weights	81.0
Socioeconomic Factor Indicators	—
Education	0.42
Housing	73.0
Linguistic	11.3
Poverty	32.3
Unemployment	15.8

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	46.99088926
Employed	90.28615424
Median HI	—
Education	—
Bachelor's or higher	94.07160272
High school enrollment	100
Preschool enrollment	79.00680098
Transportation	—
Auto Access	23.27730014
Active commuting	90.15783395
Social	—
2-parent households	2.681894007
Voting	38.18811754
Neighborhood	—
Alcohol availability	9.277556782
Park access	21.32683177
Retail density	93.54548954
Supermarket access	87.87373284
Tree canopy	10.83023226
Housing	—
Homeownership	2.181444886
Housing habitability	44.16784294
Low-inc homeowner severe housing cost burden	99.12742205
Low-inc renter severe housing cost burden	50.3143847
Uncrowded housing	77.4541255

Health Outcomes	—
Insured adults	61.8760426
Arthritis	98.1
Asthma ER Admissions	78.2
High Blood Pressure	98.0
Cancer (excluding skin)	85.3
Asthma	72.9
Coronary Heart Disease	98.1
Chronic Obstructive Pulmonary Disease	97.7
Diagnosed Diabetes	98.0
Life Expectancy at Birth	75.6
Cognitively Disabled	68.5
Physically Disabled	93.4
Heart Attack ER Admissions	63.3
Mental Health Not Good	76.1
Chronic Kidney Disease	98.6
Obesity	76.5
Pedestrian Injuries	91.5
Physical Health Not Good	95.9
Stroke	97.8
Health Risk Behaviors	—
Binge Drinking	7.0
Current Smoker	77.7
No Leisure Time for Physical Activity	96.2
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0

Children	95.8
Elderly	89.5
English Speaking	60.7
Foreign-born	69.7
Outdoor Workers	98.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	1.2
Traffic Density	63.7
Traffic Access	87.4
Other Indices	—
Hardship	5.7
Other Decision Support	—
2016 Voting	38.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	47.0
Healthy Places Index Score for Project Location (b)	60.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Anticipated construction schedule approx. 4 years
Construction: Off-Road Equipment	Default equipment with over 75 hp Tier 4 interim
Construction: Trips and VMT	Increased default trips
Construction: Architectural Coatings	SCAQMD Rule 1113
Operations: Vehicle Data	Assumed all visitors visit for 1 or all the buildings
Construction: Dust From Material Movement	Anticipated cut and fill for project
Operations: Off-Road Equipment	Potential onsite equipment
Operations: Emergency Generators and Fire Pumps	Emergency generators

APPENDIX B

Health Risk Assessment

LA BREA TAR PITS MASTER PLAN HEALTH RISK ASSESSMENT

AUGUST 2023

PREPARED FOR

Los Angeles County Museum of Natural History Foundation

LEAD AGENCY

County of Los Angeles

PREPARED BY

SWCA Environmental Consultants

LA BREA TAR PITS MASTER PLAN HEALTH RISK ASSESSMENT

Prepared for:

Los Angeles County Museum of Natural History Foundation
On behalf of County of Los Angeles Museum of Natural History
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SWCA Project No. 63953

August 2023

EXECUTIVE SUMMARY

A construction health risk assessment (HRA) for the proposed La Brea Tar Pits Master Plan (project) based on construction schedule and phasing information was conducted by SWCA Environmental Consultants on August 25, 2023. The objective of the impact assessment was to evaluate potential health risks at nearby sensitive receptors. As discussed in more detail in the report, no significant health impacts to off-site sensitive receptors are anticipated as a result of the project's construction or operation activities. The assessment predicts that the maximally exposed individual receptor (MEIR) could potentially be exposed to the following levels of impact during construction and operation of the project, which are below applicable thresholds of significance for health risks.

- Construction:
  - The chronic hazard index for diesel particulate matter (DPM) exposure at the MEIR would be 0.078, which is less than the threshold of significance of 1.0.
  - The excess cancer risk at the MEIR would be 8.95 cases per million, which is less than the South Coast Air Quality Management District (SCAQMD) threshold of significance of 10 cases per million.
- Operation:
  - The chronic hazard index for DPM exposure at the MEIR would be 0.003, which is less than the threshold of significance of 1.0.
  - The excess cancer risk at the MEIR would be 7.81 cases per million, which is less than the SCAQMD threshold of significance of 10 cases per million.
  - Since the maximum cancer risk would exceed 1 in 1 million, the cancer burden (increase in cancer cases in the population) was also estimated at 0.22 persons, which would not exceed the SCAQMD threshold of 0.5.

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1 INTRODUCTION

1.1 Purpose

In support of the air quality technical report, the health risk assessment (HRA) modeling analysis was prepared to estimate health risk impacts to existing sensitive receptors from exposure to toxic air contaminant (TAC) emissions from construction and operation of the proposed La Brea Tar Pits Master Plan (project). The analysis in this HRA uses air dispersion modeling to evaluate potential health risks associated with the project. Results of the modeling analysis are compared with the most recent California Environmental Quality Act (CEQA) significance thresholds established by the South Coast Air Quality Management District (SCAQMD). Per State CEQA Guidelines, Appendix G (14 California Code of Regulations [CCR] 15000 et seq.), the HRA directly addresses question (d): Would the project expose sensitive receptors to substantial pollutant concentrations?

1.2 Project Description

The project would involve construction and operation of a renovated La Brea Tar Pits. These facilities would be located within the city of Los Angeles. Project construction is anticipated be completed over a period of 4 years, beginning in 2024 and ending by 2028, when operations would begin. Table 1 lists the construction schedule phasing information. Figure 1 shows a map of the proposed project area.

Table 1. Construction Schedule

Phase Name	Phase Start Date	Phase End Date	Workdays per Week	Phase Duration (Workdays)
Demolition	1/1/2024	10/31/2024	6	262
Site preparation	1/1/2024	10/31/2024	6	262
Grading	11/1/2024	12/31/2024	6	52
Building	1/1/2025	7/31/2027	6	808
Architectural	7/1/2026	9/30/2026	6	79
Paving	6/1/2027	12/31/2027	6	184

1.3 Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. Facilities and structures where these air pollution-sensitive people live or spend considerable amounts of time are known as sensitive receptors. Land uses where air pollution-sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses) (California Air Resources Board [CARB] 2005). SCAQMD identifies sensitive receptors as residences, schools, playgrounds, childcare centers, long-term healthcare facilities, rehabilitation centers, convalescent centers, and retirement homes

(SCAQMD 2022). The closest off-site sensitive receptors to the project site include residences located approximately 87 feet north and 87 feet east of the project site boundary.

1.4 Toxic Air Contaminants

A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute (short-term) and/or chronic (long-term) non-cancer health effects. A toxic substance released into the air is considered a TAC. Examples include certain aromatic and chlorinated hydrocarbons, diesel particulate matter (DPM), certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources such as automobiles; and area sources such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ system and may be experienced either by acute or chronic exposure to a given TAC.

California's air toxics control program began in 1983 with the passage of the Toxic Air Contaminant Identification and Control Act, Assembly Bill (AB) 1807, better known as the Tanner Bill. The Tanner Bill established a regulatory process for the scientific and public review of individual toxic compounds. When a compound becomes listed as a TAC under the Tanner process, CARB normally establishes minimum statewide emission-control measures to be adopted by air quality management districts and air pollution control districts. By 1992, CARB has listed 18 of the 189 federal hazardous air pollutants as state TACs. In April 1993, CARB added 171 substances to the state program to make the state TAC list equivalent to the federal list of hazardous air pollutants. In 1998, CARB designated diesel engine exhaust particulate matter (DPM) as a TAC (CARB 1998). The exhaust from diesel engines is a complex mixture of gases, vapors, and particles, many of which are known human carcinogens. DPM has established cancer risk factors and relative exposure values for long-term chronic health hazard impacts. No short-term, acute relative exposure values are established and regulated, and therefore are not addressed in this construction-generated assessment.

The second major component of California's air toxics program, supplementing the Tanner process, was provided by the passage of AB 2588, the Air Toxics "Hot Spots" Information and Assessment Act of 1987. AB 2588 currently regulates over 600 compounds, including all of the Tanner-designated TACs.

Additionally, Proposition 65, passed by California voters in 1986, required that a list of carcinogenic and reproductive toxicants found in the environment be compiled, the discharge of these toxicants into drinking water be prohibited, and warnings of public exposure by air, land, or water be posted if a significant adverse public health risk is posed. The emission of any of listed substances by a facility would require a public warning unless health risks could be demonstrated to be less than significant. For carcinogens, Proposition 65 defines the "no significant risk level" as the level of exposure that would result in an increased cancer risk of greater than 10 in 1 million over a 70-year lifetime. The "no significant risk level" is 1/1,000 of the "no observable effect level" for reproductive toxicants.

In 2000, CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines. The regulation is anticipated to result in an 80% decrease in statewide diesel health risk in 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On- Road Heavy Duty Diesel Vehicle (In-Use) Regulation, On-Road Heavy Duty (New) Vehicle Program, In-Use Off-Road Diesel Vehicle Regulation, and New Off-Road Compression-Ignition (Diesel) Engines and Equipment program. These regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment. Several Airborne Toxic Control Measures reduce diesel emissions, including In-Use Off-Road Diesel-Fueled Fleets (13 CCR 2449 et seq.) and In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

1.5 Cancer Risk

Cancer risk is defined as the increase in lifetime probability (chance) of an individual developing cancer due to exposure to a carcinogenic compound, typically expressed as the increased probability in 1 million. The cancer risk from inhalation of a TAC is estimated by calculating the inhalation (and if applicable, ingestion and dermal) dose in units of milligrams (mg) per kilogram (kg) body weight per day based on an ambient concentration in units of micrograms per cubic meter ($\mu g/m^3$), breathing rate, and exposure period, and multiplying the dose by the inhalation cancer potency factor, expressed as (mg/kg body weight per day)$^{-1}$. Cancer risks are typically calculated for all carcinogenic TACs and summed to calculate the overall increase in cancer risk to an individual. The calculation procedure assumes that cancer risk is proportional to concentrations at any level of exposure and that risks due to different carcinogens are additive. This approach is generally considered a conservative assumption at low doses and is consistent with the current Office of Environmental Health Hazard Assessment (OEHHA) regulatory approach. Exposure to carcinogenic TACs does not imply that the exposed individual would contract cancer; rather, the cancer risk is a probability of developing cancer if other factors (e.g., heredity, exposure to environmental or workplace risks that compromise the immune system, overall health) would result in an increased susceptibility to developing cancer.

1.6 Acute and Chronic Non-Cancer Health Impacts

The non-cancer health impact of an inhaled TAC is measured by the hazard quotient, which is the ratio of the ambient concentration of a TAC in unit $\mu g/m^3$ divided by the reference exposure level $\mu g/m^3$. The reference exposure level (REL) is the concentration at or below which no adverse health effects are anticipated. The REL is typically based on health effects on a particular target organ system, such as the respiratory system, liver, or central nervous system. Hazard quotients of individual TACs are then summed for each target organ system to obtain a hazard index (HI).

RELs are designed to protect the most sensitive individuals in the population, including infants and children, by selecting appropriate toxicological data and including margins of safety. Accordingly, the evaluation methods are assumed to protect children and other sensitive subpopulations (groups of more highly susceptible individuals) from adverse health effects in the event of exposure (OEHHA 2008).

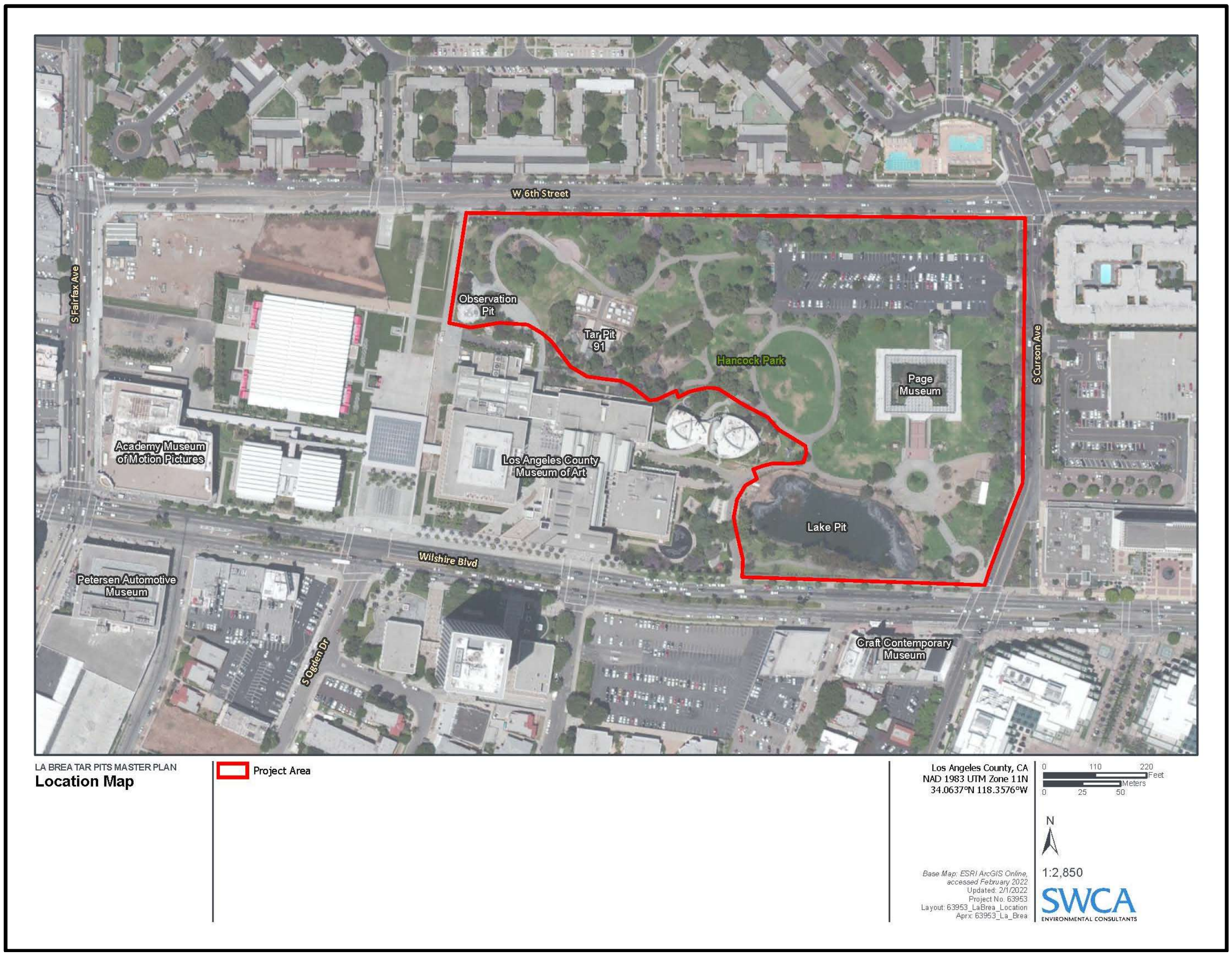

Figure 1. Project overview map.

2 SIGNIFICANCE CRITERIA

OEHHA's most recent guidance is the 2015 Risk Assessment Guidelines Manual (OEHHA 2015), which was adopted in 2015 to replace the 2003 HRA Guidance Manual. The Children's Environmental Health Protection Act of 1999 (Senate Bill 25), which requires explicit consideration of infants and children in assessing risks from air toxics, requires revisions of the methods for both non-cancer and cancer risk assessment and of the exposure assumptions in the 2003 HRA Guidance Manual. In response to Senate Bill 25, OEHHA released three technical support documents—addressing RELs (OEHHA 2008), cancer potency (OEHHA 2009), and exposure assessment and stochastic analysis (OEHHA 2012)—and adopted the 2015 Risk Assessment Guidelines Manual (OEHHA 2015). The technical support document for RELs and continuing work to reevaluate TACs to ensure adequate protection for infants and children has led to revisions of RELs for approximately 10 chemicals and chemical families. The basic methodology for evaluating acute and chronic health effects using the RELs otherwise remained the same as in the previous guidance manual.

The cancer risk methodology described in the exposure assessment and stochastic analysis technical support document and the 2015 Risk Assessment Guidelines Manual accounts for the higher sensitivity of infants and children by applying age-specific daily breathing rates and age-sensitivity factors (ASFs). According to the technical support document, "accounting for effects of early-in life exposure requires accounting for both the increased potency of early in life exposure to carcinogens and the greater exposure on a per kg body weight that occurs early in life due to behavioral and physiological differences between infants and children, and adults" (OEHHA 2012:1-6). In the absence of chemical-specific data, OEHHA recommends a default ASF of 10 for the third trimester to age 2 years, and an ASF of 3 for ages 2 through 15 years, to account for potential increased sensitivity to carcinogens during childhood (OEHHA 2015). (The ASF for adults is 1.) In addition to the ASFs, children have higher daily breathing rates per unit of body weight than adults. The OEHHA guidance manual considers the age-specific breathing rates in the cancer risk calculations.

In addition, OEHHA and CARB evaluated information from activity patterns databases to estimate the fraction of time at home (FAH) during the day. From the third trimester to age <2 years, 85% of time is spent at home. From age 2 through <16 years, 72% of time is spent at home. From age 16 years and older, 73% of time is spent at home. However, for facilities with any school within the 1 in 1 million or greater isopleth, the OEHHA recommends using an FAH of 100% for children under 16 years old (OEHHA 2015). Cancer risk parameters, such as ASFs, daily breathing rates, exposure period, FAH, and cancer potency factors were based on the values and data recommended by OEHHA as implemented in the risk calculations.

Table 2 presents the significance criteria used in this report to assess the significance of public health risks. These criteria are based on the OEHHA (OEHHA 2015), SCAQMD's Modeling Guidance for American Meteorological Society/ U.S. Environmental Protection Agency Regulatory Model (AERMOD) (SCAQMD 2006), and California Ambient Air Quality Standards (CAAQS).

Table 2. Thresholds of Significance for Public Health Risks

Risk Metric	Project-level Thresholds	Reference
Cancer Risk	10 cancers per million	OEHHA, SCAQMD
DPM Chronic Hazard Index (HI)	HI = 1 MEIR exposure/5 μg/m^3	OEHHA

In addition to cancer and non-cancer risk thresholds, if the cancer risk at the maximally exposed individual risk exceeds 1 in 1 million, the SCAQMD also requires the evaluation of cancer burden (increase in cancer cases in the population), to be compared to the threshold of 0.5 (SCAQMD 2019). No short-term, acute relative exposure values are established and regulated for DPM, and therefore these are not addressed in this assessment.

Non-cancer adverse health impacts, both acute (short term) and chronic (long term), are measured against a hazard index (HI), which is defined as the ratio of the predicted incremental exposure concentration from the proposed project to a published reference exposure level (REL) that could cause adverse health effects as established by OEHHA. The ratio (referred to as the Hazard Quotient) of each non-carcinogenic substance that affects a certain organ system is added to produce an overall HI for that organ system. The overall HI is calculated for each organ system. If the overall HI for the highest-impacted organ system is greater than 1, then the impact is considered to be significant.

The HI is an expression used for the potential for non-cancer health effects. The relationship for the non-cancer health effects is given by the annual concentration (in $\mu g/m^3$) and the REL (in $\mu g/m^3$). The acute HI was determined using the “simple” concurrent maximum approach, which tends to be conservative (i.e., overpredicts).

The relationship for the non-cancer health effects is given by the following equation:

$$HI = C/REL$$

Where:

HI = Hazard index; an expression of the potential for non-cancer health effects.

C = Annual average concentration ($\mu g/m^3$) during the exposure period.

REL = Concentration at which no adverse health effects are anticipated.

The concentration level at or below which no adverse non-cancer health effects are anticipated for a specified exposure duration is termed the REL. RELs are based on the most sensitive, relevant, adverse health effect reported in the medical and toxicological literature. RELs are designed to protect the most sensitive individuals in the population by the inclusion of margins of safety. Since margins of safety are incorporated to address data gaps and uncertainties, exceeding the REL does not automatically indicate an adverse health impact. The chronic REL for DPM was established by the California OEHHA as 5 $\mu g/m^3$.

3 MODELING METHODOLOGY

3.1 Emission Calculations

3.1.1 Construction

Emissions from the construction phase of the project were estimated using the California Emissions Estimator Model (CalEEMod) Version 2022.1. Construction scenario assumptions, including phasing, equipment mix, and vehicle trips, were based on information provided by Natural History Museums of Los Angeles County (Applicant) and CalEEMod default values. All assumptions pertaining to construction emissions, including phasing, equipment, and vehicle trips, are based on the Air Quality and

Greenhouse Gas Emissions Technical Report prepared for the project (SWCA Environmental Consultants 2023).

For purposes of estimating project emissions, and based on information provided by the project Applicant, construction is assumed to take place over 4 years from January 2024 through December 2027 (see Table 1). Construction-worker estimates and vendor truck trips by construction phase and construction equipment mix by construction phase were based on Applicant-provided information and CalEEMod defaults. CalEEMod default trip length values were used for the distances for worker and vendor trips.

This HRA focuses on DPM emitted from exhaust from on-site construction equipment, on-site truck travel, and worker, vendor, and haul diesel vehicles. Off-site on-road mobile source emissions are scaled based on a ratio of distance to determine the proportion of emissions that would occur within approximately 1,760 feet of the project site.

The daily emission rates from project construction were determined by dividing the maximum daily emissions (lbs/day) for each construction year by the 8 hours per day of construction. Table 3 presents the estimated unmitigated and mitigated construction exhaust particulate matter less than 10 microns in diameter (PM_{10}) emissions, a surrogate for DPM, generated during construction of the project. As shown in Section 4, the results of the HRA using the default construction emission factors in CalEEMod result in a potentially significant impact. Therefore, the mitigation measure MM-AQ-1 is included to reduce DPM emissions from construction equipment (see Section 4.4).

Table 3. Unmitigated and Mitigated Project On-Site and On-Road Construction Emissions

Year	Unmitigated Exhaust PM_{10} (lbs/hour)	Mitigated Exhaust PM_{10} (lbs/hour)
2024 (On-site)	0.306	0.034
2024 (On-road total)	0.001	0.0009
2024 (On-road per 1,760 feet)	3.27E-05	2.90E-05
2025 (On-site)	0.059	0.016
2025 (On-road total)	0.002	0.002
2025 (On-road per 1,760 feet)	5.68E-05	5.68E-05
2026 (On-site)	0.055	0.019
2026 (On-road total)	0.002	0.002
2026 (On-road per 1,760 feet)	5.68E-05	5.68E-05
2027 (On-site)	0.078	0.024
2027 (On-road total)	0.001	0.001
2027 (On-road per 1,760 feet)	4.08E-04	4.08E-05

Source: See Appendix A for risk calculations.

3.1.2 Operations

Operational year 2028 was assumed consistent with completion of project construction. Emissions from project operations include visitor, worker, and maintenance vehicle travel. For risk assessment purposes, PM_{10} in diesel exhaust is considered DPM, originating mainly from vehicle emissions off-site, and off-road/stationary equipment on-site. Visitor, worker, and maintenance traffic was modeled for one-way trip distances to 1,760 feet from the project site boundary to estimate emissions at proximate receptors.

Vehicle emission per day were obtained from CalEEMod and used to determine hourly emission rates. Per-day on-site emissions from potential off-site and stationary equipment were also obtained from CalEEMod to determine hourly emissions rates. Table 4 presents the estimated hourly operational emissions.

Table 4. Project On-Site and On-Road Operational Emissions

Year	Exhaust PM_{10} (lbs/hour)
2028 (On-site)	0.0013
2028 (On-road total)	0.05
2028 (On-road per 1,760 feet)	3.09E-03

Source: See Appendix A for risk calculations.

3.2 Air Dispersion Modeling

Air dispersion models calculate the atmospheric transport and fate of pollutants from the emission source. The models calculate the concentration of selected pollutants at specific downwind ground-level points, such as residential receptors. The transformation (fate) of an airborne pollutant, its movement with the prevailing winds (transport), its crosswind and vertical movement due to atmospheric turbulence (dispersion), and its removal due to dry and wet deposition are influenced by the pollutant's physical and chemical properties and by meteorological and environmental conditions. Factors such as distance from the source to the receptor, meteorological conditions, intervening land use and terrain, pollutant release characteristics, and background pollutant concentrations affect the predicted air concentration of an air pollutant. Air dispersion models have the capability to take all of these factors into consideration when calculating downwind ground-level pollutant concentrations.

A dispersion modeling analysis of DPM emitted from project construction diesel vehicles and off-road equipment was conducted on the areas surrounding the project site for the HRA. Furthermore, the TAC emissions from off-site vehicle travel and on-site off-road/stationary equipment were conducted on the project site for the operational HRA.

The AERMOD dispersion model (Version 21112) was used to estimate pollutant concentrations at specific distances from project emission sources using 5 years (2012–2016) of hourly meteorological data from the USC/Downtown L.A. Meteorological Station (KCQT) (Station ID 93134), obtained from SCAQMD.

Terrain elevations were obtained from commercially available digital terrain elevations developed by the U.S. Geological Survey (USGS) by using its National Elevation Dataset (USGS 2018). The National Elevation Dataset provides terrain elevations with 1-meter vertical resolution and 30-meter (1 arc-second) horizontal resolution based on a Universal Transverse Mercator (UTM) coordinate system. The USGS specifies coordinates in North American Datum 83, UTM Zone 10. Lakes Environmental software (Version 10.2.1) was used to process the National Elevation Dataset data and assign elevations to the receptor locations and sources. According to SCAQMD guidelines, the urban dispersion option was selected and Los Angeles County population for year 2021 (9,829,544 persons) was input into AERMOD.

This HRA evaluates the risk to existing residential receptors located in proximity to the project site. Receptors were placed assuming a nested grid of 2 × 2 meters. Receptors were only placed within the identified residential buildings. Flagpole receptors were included at a height of 1.8 meters and 4.8 meters, representing the first and second floors.

Off-site vehicle travel was modeled as a line of adjacent volume sources, and on-site truck travel and off-road/stationary equipment were modeled as four area sources making up the project site. The emission rates were proportioned over the area sources for on-site construction emissions and divided between the volume sources for off-site hauling emissions. To determine contaminant impacts during construction hours, the model's "hour-per-day" (HRDAY) scalar option was invoked to predict ground-level concentrations for emissions generated between the hours of 8:00 a.m. and 4:00 p.m., assuming 6 days per week. To determine contaminant impacts during operation hours, the model's "hour-per-day" (HRDAY) scalar option was invoked to predict ground-level concentrations for emissions generated between the hours of 8:00 a.m. and 4:00 p.m., conservatively assuming 6 days per week. Operation includes three emergency generators; however, testing would occur one engine at a time. The modeling includes one emergency generator running 2 hours per day for testing purposes.

3.3 Health Risk Assessment Methodology

Construction Health Risk Assessment

In March 2015, the OEHHA approved the 2015 Risk Assessment Guidelines Manual (OEHHA 2015). SCAQMD requires that all HRAs prepared for CEQA documents follow SCAQMD policies in conjunction with the 2015 Risk Assessment Guidelines Manual. Using concentrations generated by AERMOD, resulting cancer and non-cancer risk at the existing receptors from exposure to DPM emissions were assessed using the OEHHA-derived calculation method. For the purposes of this assessment, given the less-than-lifetime exposure period, and the higher breathing rates and sensitivity of children to construction-generated TACs, the cancer risk calculation assumes that the exposure would affect children early in their lives. For the residential construction health risk, the HRA assumes exposure would start in the third trimester of pregnancy and occur 8 hours per day, 6 days per week, for 4 years.

Operation Health Risk Assessment

For the operational health risk, the HRA assumes exposure would start in the third trimester through 30 years for all receptor locations. The SCAQMD has also established noncarcinogenic risk parameters for use in HRAs, since some TACs increase non-cancer health risk due to long-term (chronic) exposures and some TACs increase non-cancer health risk due to short-term (acute) exposures; however, no short-term, acute relative exposure values are established and regulated for DPM and therefore these are not addressed in this assessment. Noncarcinogenic risks are quantified by calculating a hazard index, expressed as the ratio between the ambient pollutant concentration and its toxicity or REL, which is a concentration at or below which health effects are not likely to occur. The chronic hazard index is the sum of the individual substance chronic hazard indices for all TACs affecting the same target organ system.

Carcinogenic Chemical Risk

Carcinogenic compounds are not considered to have threshold levels (i.e., dose levels below which there are no risks). Any exposure, therefore, will have some associated risk. The SCAQMD has established a maximum incremental cancer risk of 10 in 1 million (1.0E-05) for CEQA projects, and OEHHA also defines a typical risk management level as 10 in 1 million (OEHHA 2015).

Health risks associated with exposure to carcinogenic compounds can be defined in terms of the probability of developing cancer as a result of exposure to a chemical at a given concentration. The cancer risk probability is determined by multiplying the chemical's annual concentration by its cancer potency factor (CPF), a measure of the carcinogenic potential of a chemical when a dose is received through the inhalation pathway. It is an upper-limit estimate of the probability of contracting cancer as a result of continuous exposure to an ambient concentration of 1 $\mu g/m^3$ over a lifetime of 70 years.

Recent guidance from OEHHA recommends a refinement to the standard point estimate approach with the use of age-specific breathing rates and age sensitivity factors (ASFs) to assess risk for susceptible subpopulations such as children. For the inhalation pathway, the procedure requires the incorporation of several discrete variates to effectively quantify dose for each age group. Once determined, contaminant dose is multiplied by the CPF in units of inverse dose expressed in milligrams per kilogram per day (mg/kg/day) to derive the cancer risk estimate. Therefore, to accommodate the unique exposures associated with the residential-based receptors, the following dose algorithm was used:

$$\mathbf{DOSE_{air} = (C_{air} \times \{BR/BW\} \times A \times EF \times ED \times 10^{-6}) / AT}$$

Where:

$DOSE_{air}$	= Dose through inhalation (mg/kg-day)
C_{air}	= Concentration in air (μg/m^3) (calculated by AERMOD)
{BR/BW}	= Daily breathing rate normalized to body weight (liters/kg body weight-day)
A	= Inhalation absorption factor (unitless)
EF	= Exposure frequency (unitless), days/365 days
10^{-6}	= Micrograms to milligrams conversion, liters to cubic meters conversion
ED	= Exposure duration (in years) for a specified age group
AT	= Averaging time for lifetime cancer risk (years)

The inhalation absorption factor (A) is a unitless factor that is only used if the cancer potency factor included a correction for absorption across the lung. For this assessment, the default value of 1 was used. For residential receptors, the exposure frequency (EF) of 0.96 is used to represent 350 days per year to allow for a 2-week period away from home each year (OEHHA 2015). This timeline is considered appropriate for potential residential exposures established by OEHHA (2015). For residential receptors, the 95th percentile daily breathing rates (BR/BW), exposure durations (ED) over the 4-year construction period, age sensitivity factors (ASFs), and fraction of time at home (FAH) for the various age groups are provided in Appendix A.

For construction analysis, the residential exposure duration spans the length of construction (e.g., 4 years). To calculate the overall cancer risk, the risk for each appropriate age group is calculated per the following equation:

$$\mathbf{RISK_{inh\text{-}res} = DOSE_{air} \times CPF \times ASF \times FAH}$$

Where:

$RISK_{inh\text{-}res}$	= Residential inhalation cancer risk
$DOSE_{air}$	= Daily inhalation dose (milligrams/kilogram [mg/kg]-day)
CPF	= Inhalation cancer potency factor (mg/kg-day^{-1})
ASF	= Age sensitivity factor for a specified age group (unitless)
FAH	= Fraction of time spent at home (unitless)

The CPFs used in the assessment were obtained from OEHHA guidance. The excess lifetime cancer risks during the construction period to the maximally exposed resident were calculated based on the factors provided in Appendix A. The cancer risks for each age group are summed to estimate the total cancer risk for each toxic chemical species. For purposes of this assessment, the calculated residential cancer risks associated with construction activities are based on the following age groups: third trimester, 0 to 2 years old, 2 to 9 years old, and 16 to 30 years old. The final step converts the cancer risk in scientific notation to a whole number that expresses the cancer risk in "chances per million" by multiplying the cancer risk by a factor of 1x106 (i.e., 1 million). For construction, the calculated results are provided in Appendix A.

Non-Carcinogenic Hazards

An evaluation of the potential non-cancer effects of chronic chemical exposures was also conducted. Adverse health effects are evaluated by comparing the annual receptor level (ground) concentration of each chemical compound with the appropriate reference exposure limit (REL). Available RELs promulgated by OEHHA were considered in the assessment.

To quantify non-carcinogenic impacts, the hazard index approach was used. The HI assumes that chronic and acute subthreshold exposures adversely affect a specific organ or organ system (toxicological endpoint). For each discrete chemical exposure, target organs presented in regulatory guidance were used. To calculate the HI, each chemical concentration or dose is divided by the appropriate toxicity value.

For compounds affecting the same toxicological endpoint, this ratio is summed. Where the total equals or exceeds 1, a health hazard is presumed to exist. For construction, the chronic hazard analysis for DPM is provided in Appendix A. The calculations contain the relevant exposure concentrations and corresponding reference dose values used in the evaluation of noncarcinogenic exposures.

4 HEALTH RISK ANALYSIS RESULTS

4.1 Construction

The cancer risk calculations were performed by multiplying the AERMOD-predicted DPM concentrations in µg/m^3 due to DPM emissions from off-site vehicles and on-site construction equipment by the appropriate risk values. The potential exposure pathway for DPM includes inhalation only. The potential exposure through other pathways (e.g., ingestion) requires substance and site-specific data, and the specific parameters for DPM are not known for these pathways (CARB 1998).

The excess cancer risks to off-site receptors due to project construction are calculated assuming exposure during the entire calendar year to the emission rates presented in Appendix A for the respective calendar year. For construction analysis, the exposure duration spans the length of construction. As the length of construction is equal to 4 years, only the third trimester, 0–2, and 2–9 age bins apply to the construction analysis for the off-site residential receptors. A more detailed breakdown of the risk calculations is included in Appendix A.

Table 5 shows the maximum cancer and chronic health risks at the maximally exposed residential receptor from project construction. AERMOD concentrations per construction year are in Appendix A.

Table 5. Excess Cancer Risk – Unmitigated

Impact Parameter	Unit	Project Impact	CEQA Threshold	Level of Significance
Maximum Individual Cancer Risk – Residential	per million	78.07	10	**Potentially Significant**
Chronic Hazard Index – Residential	HI value	0.08	1.0	Less than Significant

Source: SCAQMD (2022a)
Note: See Appendix A for detailed results.

As shown in Table 5, the HRA results from the unmitigated scenario show cancer risks exceeding the 10 in 1 million threshold and thus a potentially significant impact at the maximally exposed individual residential receptors. These potentially significant health risk impacts triggered the requirement of MM-AQ-1 (see Section 4.4) in order to reduce project construction-generated DPM emissions to the extent feasible. The HRA results after incorporation of MM-AQ-1 are presented in Table 6.

Table 6. Excess Cancer Risk – Mitigated

Impact Parameter	Unit	Project Impact	CEQA Threshold	Level of Significance
Maximum Individual Cancer Risk – Residential	per million	8.95	10	**Potentially Significant**
Chronic Hazard Index – Residential	HI value	0.007	1.0	Less than Significant

Source: SCAQMD (2019)
Note: See Appendix A for detailed results.

As shown in Table 6, with the implementation of mitigation MM-AQ-1 requiring Tier 4 Interim equipment, the estimated cancer risk during project construction would be reduced below the SCAQMD threshold of 10 in 1 million (approximately 8.95 in a million). This level of risk would occur if an individual's exposure began in the third trimester of pregnancy and lasted for the duration of the project construction.

Non-cancer risk resulting from chronic exposure to construction DPM are also presented in Table 5 and Table 6. Risks are presented in terms of hazard index (HI), which is derived from the ratio of the concentration of DPM at the receptor over the REL. The project's construction impacts would have an HI of less than 1 at the MEIR, which indicates that the project would not expose sensitive receptors to chronically harmful levels of DPM (see Table 6). Therefore, the impacts to public health risk from construction of the project are less than significant. A more detailed summary of modeled results is included in Appendix A.

4.2 Operations

The operational cancer risk calculations were performed by multiplying the AERMOD-predicted TAC concentrations in µg/m³ due to TAC emissions from off-site vehicle travel and on-site off-road/stationary equipment by the appropriate risk values. The mandatory potential exposure through pathways (e.g., ingestion) are selected for the operation-generated TAC emissions. Table 7 summarizes the HRA results based on the HRA methodology described above and contained in Appendix A.

The excess cancer risks to off-site receptors due to project construction are calculated assuming exposure during the entire calendar year to the emission rates presented in Appendix A for the respective calendar year. Total excess cancer risks over 30 years are determined by adding the risks from each calendar year. A more detailed breakdown of the risk calculations is included in Appendix A. Operation of the project would result in a maximum excess cancer risk of approximately 7.81 in 1 million.

Table 7. Operations Excess Cancer Risk

Impact Parameter	Unit	Project Impact	CEQA Threshold	Level of Significance
Maximum Individual Cancer Risk – Residential	per million	7.81	10	**Potentially Significant**
Chronic Hazard Index – Residential	HI value	0.003	1.0	Less than Significant

Source: SCAQMD (2022a)
Note: See Appendix A for detailed results.

As shown in Table 7, the project's potential cancer health risk of 7.81 in 1 million would not exceed the SCAQMD threshold of 10 in 1 million. Because the project-level threshold of significance is less than 10 cases per million, project operations would not result in significant impacts to excess cancer risk.

Non-cancer risk resulting from chronic exposure to operational DPM are also presented in Table 7. Risks are presented in terms of hazard index (HI), which is derived from the ratio of the concentration of DPM at the receptor over the REL. The project's operational impacts would have an HI of less than 1 at the MEIR, which indicates that the project would not expose sensitive receptors to chronically harmful levels of DPM. Therefore, the impacts to public health risk from operation of the project are less than significant. A more detailed summary of modeled results is included in Appendix A.

4.3 Cancer Burden

As determined, since the cancer risk from project operation at the maximally exposed individual resident exceeds 1 in 1 million, cancer burden—which has a SCAQMD significance threshold of 0.5—is evaluated. Unlike cancer risk, which is the lifetime probability (chance) of an individual developing cancer due to exposure to a carcinogenic compound, cancer burden estimates the number of theoretical cancer cases in a defined population resulting from a lifetime exposure to carcinogenic TACs. As described in the OEHHA guidance manual:

> The cancer burden can be calculated by multiplying the cancer risk at a census block centroid by the number of people who live in the census block, and adding up the estimated number of potential cancer cases across the zone of impact. The result of this calculation is a single number that is intended to estimate of the number of potential cancer cases within the population that was exposed to the emissions for a lifetime (70 years). (OEHHA 2015:8-16)

The SCAQMD has established a procedural screening approach for estimating cancer burden (SCAQMD 2019), which includes the following steps:

- Recalculate cancer risk from all TACs using a 70-year exposure duration.
- Estimate the distance at which the maximum individual cancer risk from a 70-year exposure duration falls below 1 in 1 million.
- Define a zone of impact in the shape of a circle, with the radius equal to the distance between the TAC source and the point at which the risk falls below 1 in 1 million.
- Estimate the residential population within this zone of impact based on census data or a worse-case estimate.
- Calculate the screening level cancer burden by multiplying the total residential population in the zone of impact by the maximum individual cancer risk.

The maximum estimated 70-year cancer risk for project operation was estimated at 9.11 in 1 million. The total population in the zone of impact area was estimated to be approximately 24,644 persons, based on the average densities of the Census Tracts that would be within the zone of impact (Census Tract 2151.01, 2151.02, 2162.01, 2163.02, 2145.01, 2145.03, 2145.04, and 2147) (U.S. Census Bureau 2020).

Multiplying the maximum estimated 70-year cancer risk by the project population gives a cancer burden of 0.22. Accordingly, the cancer burden indicates that less than one person could contract cancer assuming a 70-year exposure under the modeled scenario of TAC emissions and provided that other factors related to an individual's susceptibility to contracting cancer would occur. An estimated cancer burden of 0.22 would be less than the SCAQMD cancer burden threshold of 0.5. Thus, the impact with respect to potential cancer burden due to project operations would be less than significant.

4.4 Mitigation Measures

MM-AQ-1: To reduce the potential for health risks as a result of construction of the project, the Applicant shall:

- Prior to the start of construction activities, it shall be ensured that all 75-horsepower or greater diesel-powered equipment are powered with CARB-certified Tier 4 Interim engines, except where the County determines that Tier 4 Interim equipment is not available.

- All other diesel-powered construction equipment will be classified as Tier 3 or higher, at a minimum, except where the County determines Tier 3 equipment is not available.

There are several other SCAQMD rules and regulations that serve as mitigation measures for the project construction. These rules are:

- SCAQMD Rule 403, which requires projects to incorporate fugitive dust control measures;
- SCAQMD Rule 1113, which limits the volatile organic compound content of architectural coating; and
- SCAQMD Regulation XIII, New Source Review, which requires new on-site facility nitrogen oxide emissions to be minimized through the use of emission control measures (e.g., use of best available control technology for new combustion sources such as boilers and water heaters).

5 CONCLUSIONS

The results determined in this analysis reflect reasonable estimates of source emissions and exhaust characteristics, available meteorological data near the project site, and the use of currently approved air quality models. Given the limits of available tools for such an analysis, the actual impacts may vary from the estimates in this assessment. However, the combined use of the AERMOD dispersion model and the health impact calculations required by OEHHA and SCAQMD tend to overpredict impacts, such that they produce conservative (i.e., health protective) results. For this reason, the estimated cancer risks and non-cancer hazard indices reported in this analysis are likely upper-bound estimates for potential exposure to project-related emissions. In addition, the estimated cancer risks and non-cancer hazard indices represent the maximum exposed individual resident, and do not represent the risk over a broad area. The actual risks of cancer or non-cancer effects from the project are likely to be lower than presented herein.

Based on this analysis, project construction would result in potential chronic health risk and potential cancer health risk impacts at the maximally exposed residential receptor below the OEHHA threshold without the need for mitigation. However, potential cancer health risk impacts from project construction at the proximate existing residential receptors would exceed the SCAQMD threshold. With implementation of mitigation measure MM-AQ-1, potential cancer risk at the maximally exposed residential receptor would be reduced to a less-than-significant level. Potential health risk at existing residential receptors from project operation would result in potential cancer health risk and chronic health risk that would not exceed the applicable SCAQMD thresholds. This would be a less-than-significant impact. The project would also result in less-than-significant cancer burden impacts.

6 REFERENCES

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APPENDIX A – Detailed Risk Calculations

La Brea Tar Pits Master Plan Construction Health Risk Calculations

Construction Year 2024 - Unmitigated		
PM_{10} (µg/m3)		
Annual Avg Concentration:	0.42218	µg/m3

Age Bin	Infant/Child				Adult	
	3rd trimester	0<2 years			16<30 years	
DOSEair = (Cair*(BR/BW)*A*EF*10^{-6})	1.461E-04	4.413E-04			1.057E-04	

Risk = DOSEair * CPF * ASF * ED/AT * FAH	4.880E-06	5.894E-05			1.697E-05	
Total Cancer Risk (per million)	4.8802	58.9404			16.9691	
Cancer Risk Threshold	**10**					

Chronic Noncancer Hazard		
Hazard Quotient = Ci/RELi =	**8.44E-02**	
Threshold:	**1.00**	
Ci - Concentration (annual average)	4.22E-01	µg/m3
RELi - Reference Exposure Level for Diesel Exhaust	5	

	10+6	1.00E+06	per million	
	CPF	1.1E+00	$(mg/kg/day)^{-1}$	Cancer Potency Factor for DPM
BR/BW	BR/BW (3rd trimester)	361	L/kg bodyweight- day	Daily Breathing rate normalized to body weight
	BR/BW (0 < 2 yrs)	1090		
	BR/BW (16 < 30 yrs)	261		
	BR/BW (16 < 70 yrs)	233		
	$_{10}$-6	1.00E-06	Micrograms to milligrams conversions, liters to cubic meters conversion	
	Cair	0.4222	ug/m^3	Concentration in air (ug/m^3), modeled annual average concentration
	A	1	Inhalation absorption factor	
	EF	0.96	days/year	Exposure frequency (days/year)
ED	ED (3rd trimester)	0.25	years	Exposure duration (years)
	ED (0 < 2 years)	1		
	ED (2 < 16, 16 < 30 years)	14		
	ED (16 - 70 years)	54		
	AT	70	years	Averaging time period over which exposure is averaged
ASF	ASF (3rd trimester-2 yrs)	10	Age Sensitivity Factor	
	ASF (16 - 70 years)	1		
FAH	FAH (3rd trimester-2 yrs)	0.85	Fraction of time spent at home (unitless)	
	FAH (16 - 70 years)	0.73		

La Brea Tar Pits Master Plan Construction Health Risk Calculations

Construction Year 2025 - Unmitigated		
PM_{10} (µg/m3)		
Annual Avg Concentration:	0.07602	µg/m3

Age Bin	Infant/Child				Adult	
		0<2 years			16<30 years	
DOSEair = (Cair*(BR/BW)*A*EF*10^{-6})		7.946E-05			1.903E-05	

Risk = DOSEair * CPF * ASF * ED/AT * FAH		1.061E-05			3.056E-06	
Total Cancer Risk (per million)		10.6131			3.0555	
Cancer Risk Threshold	**10**					

Chronic Noncancer Hazard		
Hazard Quotient = Ci/RELi =	**1.52E-02**	
Threshold:	**1.00**	
Ci - Concentration (annual average)	7.60E-02	µg/m3
RELi - Reference Exposure Level for Diesel Exhaust	5	

	10+6	1.00E+06	per million	
	CPF	1.1E+00	$(mg/kg/day)^{-1}$	Cancer Potency Factor for DPM
BR/BW	BR/BW (0 < 2 yrs)	1090	L/kg bodyweight- day	Daily Breathing rate normalized to body weight
	BR/BW (16 < 30 yrs)	261		
	BR/BW (16 < 70 yrs)	233		
	10-6	1.00E-06	Micrograms to milligrams conversions, liters to cubic meters conversion	
	Cair	0.0760	ug/m^3	Concentration in air (ug/m^3), modeled annual average concentration
	A	1	Inhalation absorption factor	
	EF	0.96	days/year	Exposure frequency (days/year)
ED	ED (0 < 2 years)	1	years	Exposure duration (years)
	ED (2 < 16, 16 < 30 years)	14		
	ED (16 - 70 years)	54		
	AT	70	years	Averaging time period over which exposure is averaged
ASF	ASF (3rd trimester-2 yrs)	10	Age Sensitivity Factor	
	ASF (16 - 70 years)	1		
FAH	FAH (3rd trimester-2 yrs)	0.85	Fraction of time spent at home (unitless)	
	FAH (16 - 70 years)	0.73		

La Brea Tar Pits Master Plan Construction Health Risk Calculations

Construction Year 2026 - Unmitigated		
PM_{10} (µg/m3)		
Annual Avg Concentration:	0.07098	µg/m3

Age Bin	Infant/Child				Adult	
			2<9 years		16<30 years	
DOSEair = (Cair*(BR/BW)*A*EF*10^{-6})			4.295E-05		1.776E-05	

Risk = DOSEair * CPF * ASF * ED/AT * FAH			1.458E-06		2.853E-06	
Total Cancer Risk (per million)			1.4578		2.8530	
Cancer Risk Threshold	**10**					

Chronic Noncancer Hazard		
Hazard Quotient = Ci/RELi =	**1.42E-02**	
Threshold:	**1.00**	
Ci - Concentration (annual average)	7.10E-02	µg/m3
RELi - Reference Exposure Level for Diesel Exhaust	5	

	10+6	1.00E+06	per million	
	CPF	1.1E+00	$(mg/kg/day)^{-1}$	Cancer Potency Factor for DPM
BR/BW	BR/BW (2 < 9 yrs)	631	L/kg bodyweight- day	Daily Breathing rate normalized to body weight
	BR/BW (16 < 30 yrs)	261		
	BR/BW (16 < 70 yrs)	233		
	10^{-6}	1.00E-06	Micrograms to milligrams conversions, liters to cubic meters conversion	
	Cair	0.0710	ug/m^3	Concentration in air (ug/m^3), modeled annual average concentration
	A	1	Inhalation absorption factor	
	EF	0.96	days/year	Exposure frequency (days/year)
ED	ED (2 < 9 years)	1	years	Exposure duration (years)
	ED (2 < 16, 16 < 30 years)	14		
	ED (16 - 70 years)	54		
	AT	70	years	Averaging time period over which exposure is averaged
ASF	ASF (2 - 16 years)	3	Age Sensitivity Factor	
	ASF (16 - 70 years)	1		
FAH	FAH (2 - 16 years)	0.72	Fraction of time spent at home (unitless)	
	FAH (16 - 70 years)	0.73		

La Brea Tar Pits Master Plan Construction Health Risk Calculations

Construction Year 2027 - Unmitigated		
PM_{10} (µg/m3)		
Annual Avg Concentration:	0.10585	µg/m3

Age Bin	Infant/Child				Adult	
			2<9 years		16<30 years	
DOSEair = (Cair*(BR/BW)*A*EF*10^{-6})			6.405E-05		2.649E-05	

Risk = DOSEair * CPF * ASF * ED/AT * FAH			2.174E-06		4.255E-06	
Total Cancer Risk (per million)			2.1739		4.2545	
Cancer Risk Threshold	**10**					

Chronic Noncancer Hazard		
Hazard Quotient = Ci/RELi =	**2.12E-02**	
Threshold:	**1.00**	
Ci - Concentration (annual average)	1.06E-01	µg/m3
RELi - Reference Exposure Level for Diesel Exhaust	5	

	10+6	1.00E+06	per million	
	CPF	1.1E+00	$(mg/kg/day)^{-1}$	Cancer Potency Factor for DPM
BR/BW	BR/BW (2 < 9 yrs)	631	L/kg bodyweight- day	Daily Breathing rate normalized to body weight
	BR/BW (16 < 30 yrs)	261		
	BR/BW (16 < 70 yrs)	233		
	10^{-6}	1.00E-06	Micrograms to milligrams conversions, liters to cubic meters conversion	
	Cair	0.1059	ug/m^3	Concentration in air (ug/m^3), modeled annual average concentration
	A	1	Inhalation absorption factor	
	EF	0.96	days/year	Exposure frequency (days/year)
ED	ED (2 < 9 years)	1	years	Exposure duration (years)
	ED (2 < 16, 16 < 30 years)	14		
	ED (16 - 70 years)	54		
	AT	70	years	Averaging time period over which exposure is averaged
ASF	ASF (2 - 16 years)	3	Age Sensitivity Factor	
	ASF (16 - 70 years)	1		
FAH	FAH (2 - 16 years)	0.72	Fraction of time spent at home (unitless)	
	FAH (16 - 70 years)	0.73		

Construction Cancer Risk by Year				
Exposure Year	Age	Infant/Child - Exposure Information		Infant/Child Cancer Risk
		DPM Conc (ug/m3)		
		Year	Annual	(per million)
0	-0.25-0*	2024	0.42218	4.880
1	0-1	2024	0.42218	58.940
2	1-2	2025	0.07602	10.613
3	2-3	2026	0.07098	1.458
4	3-4	2027	0.10585	2.174
5	4-5	0	-	-
6	5-6	0	-	-
7	6-7	0	-	-
8	7-8	0	-	-
9	8-9	0	-	-
10	9-10	0	-	-
11	10-11	0	-	-
12	11-12	0	-	-
13	12-13	0	-	-
14	13-14	0	-	-
15	14-15	0	-	-
16	15-16	0	-	-
17	16-17	0	-	-
18	17-18	0	-	-
19	18-19	0	-	-
20	19-20	0	-	-
21	20-21	0	-	-
22	21-22	0	-	-
23	22-23	0	-	-
24	23-24	0	-	-
25	24-25	0	-	-
26	25-26	0	-	-
27	26-27	0	-	-
28	27-28	0	-	-
29	28-29	0	-	-
30	29-30	0	-	-
			Total Cancer Risk - Infant/Child	**78.065**
Threshold:	**10.0000**			
Cancer Burden:	**2.5925**		**24644**	**persons**
*3rd Trimester of pregnancy				

La Brea Tar Pits Master Plan Construction Health Risk Calculations

Construction Year 2024 - Mitigated		
PM_{10} (µg/m3)		
Annual Avg Concentration:	0.03648	µg/m3

Age Bin	Infant/Child				Adult	
	3rd trimester	0<2 years			16<30 years	
DOSEair = (Cair*(BR/BW)*A*EF*10^{-6})	1.263E-05	3.813E-05			9.130E-06	

Risk = DOSEair * CPF * ASF * ED/AT * FAH	4.217E-07	5.093E-06			1.466E-06	
Total Cancer Risk (per million)	0.4217	5.0930			1.4663	
Cancer Risk Threshold	**10**					

Chronic Noncancer Hazard		
Hazard Quotient = Ci/RELi =	**7.30E-03**	
Threshold:	**1.00**	
Ci - Concentration (annual average)	3.65E-02	µg/m3
RELi - Reference Exposure Level for Diesel Exhaust	5	

	10+6	1.00E+06	per million	
	CPF	1.1E+00	$(mg/kg/day)^{-1}$	Cancer Potency Factor for DPM
BR/BW	BR/BW (3rd trimester)	361	L/kg bodyweight- day	Daily Breathing rate normalized to body weight
	BR/BW (0 < 2 yrs)	1090		
	BR/BW (2 < 9 yrs)	631		
	BR/BW (2 < 16 yrs)	572		
	BR/BW (16 < 30 yrs)	261		
	BR/BW (16 < 70 yrs)	233		
	10-6	1.00E-06	Micrograms to milligrams conversions, liters to cubic meters conversion	
	Cair	0.0365	ug/m^3	Concentration in air (ug/m^3), modeled annual average concentration
	A	1	Inhalation absorption factor	
	EF	0.96	days/year	Exposure frequency (days/year)
ED	ED (3rd trimester)	0.25	years	Exposure duration (years)
	ED (0 < 2 years)	1		
	ED (2 < 16, 16 < 30 years)	14		
	ED (16 - 70 years)	54		
	AT	70	years	Averaging time period over which exposure is averaged
ASF	ASF (3rd trimester-2 yrs)	10	Age Sensitivity Factor	
	ASF (16 - 70 years)	1		
FAH	FAH (3rd trimester-2 yrs)	0.85	Fraction of time spent at home (unitless)	
	FAH (16 - 70 years)	0.73		

La Brea Tar Pits Master Plan Construction Health Risk Calculations

Construction Year 2025 - Mitigated		
PM_{10} (µg/m3)		
Annual Avg Concentration:	0.01769	µg/m3

Age Bin	Infant/Child				Adult	
		0<2 years			16<30 years	
DOSEair = (Cair*(BR/BW)*A*EF*10^{-6})		1.849E-05			4.427E-06	

Risk = DOSEair * CPF * ASF * ED/AT * FAH		2.470E-06			7.110E-07	
Total Cancer Risk (per million)		2.4697			0.7110	
Cancer Risk Threshold	**10**					

Chronic Noncancer Hazard		
Hazard Quotient = Ci/RELi =	**3.54E-03**	
Threshold:	**1.00**	
Ci - Concentration (annual average)	1.77E-02	µg/m3
RELi - Reference Exposure Level for Diesel Exhaust	5	

	10+6	1.00E+06	per million	
	CPF	1.1E+00	$(mg/kg/day)^{-1}$	Cancer Potency Factor for DPM
BR/BW	BR/BW (0 < 2 yrs)	1090	L/kg bodyweight- day	Daily Breathing rate normalized to body weight
	BR/BW (16 < 30 yrs)	261		
	BR/BW (16 < 70 yrs)	233		
	10^{-6}	1.00E-06	Micrograms to milligrams conversions, liters to cubic meters conversion	
	Cair	0.0177	ug/m^3	Concentration in air (ug/m^3), modeled annual average concentration
	A	1	Inhalation absorption factor	
	EF	0.96	days/year	Exposure frequency (days/year)
ED	ED (0 < 2 years)	1	years	Exposure duration (years)
	ED (2 < 16, 16 < 30 years)	14		
	ED (16 - 70 years)	54		
	AT	70	years	Averaging time period over which exposure is averaged
ASF	ASF (3rd trimester-2 yrs)	10	Age Sensitivity Factor	
	ASF (16 - 70 years)	1		
FAH	FAH (3rd trimester-2 yrs)	0.85	Fraction of time spent at home (unitless)	
	FAH (16 - 70 years)	0.73		

La Brea Tar Pits Master Plan Construction Health Risk Calculations

Construction Year 2026 - Mitigated		
PM_{10} (µg/m3)		
Annual Avg Concentration:	0.02039	µg/m3

Age Bin	Infant/Child				Adult	
			2<9 years		16<30 years	
DOSEair = (Cair*(BR/BW)*A*EF*10^{-6})			1.234E-05		5.103E-06	

Risk = DOSEair * CPF * ASF * ED/AT * FAH			4.188E-07		8.196E-07	
Total Cancer Risk (per million)			0.4188		0.8196	
Cancer Risk Threshold	**10**					

Chronic Noncancer Hazard		
Hazard Quotient = Ci/RELi =	**4.08E-03**	
Threshold:	**1.00**	
Ci - Concentration (annual average)	2.04E-02	µg/m3
RELi - Reference Exposure Level for Diesel Exhaust	5	

	10+6	1.00E+06	per million	
	CPF	1.1E+00	$(mg/kg/day)^{-1}$	Cancer Potency Factor for DPM
BR/BW	BR/BW (2 < 9 yrs)	631	L/kg bodyweight- day	Daily Breathing rate normalized to body weight
	BR/BW (16 < 30 yrs)	261		
	BR/BW (16 < 70 yrs)	233		
	10^{-6}	1.00E-06	Micrograms to milligrams conversions, liters to cubic meters conversion	
	Cair	0.0204	ug/m^3	Concentration in air (ug/m^3), modeled annual average concentration
	A	1	Inhalation absorption factor	
	EF	0.96	days/year	Exposure frequency (days/year)
ED	ED (2 < 9 years)	1	years	Exposure duration (years)
	ED (2 < 16, 16 < 30 years)	14		
	ED (16 - 70 years)	54		
	AT	70	years	Averaging time period over which exposure is averaged
ASF	ASF (2 - 16 years)	3	Age Sensitivity Factor	
	ASF (16 - 70 years)	1		
FAH	FAH (2 - 16 years)	0.72	Fraction of time spent at home (unitless)	
	FAH (16 - 70 years)	0.73		

La Brea Tar Pits Master Plan Construction Health Risk Calculations

Construction Year 2027 - Mitigated		
PM_{10} (µg/m3)		
Annual Avg Concentration:	0.02639	µg/m3

Age Bin	Infant/Child				Adult	
			2<9 years		16<30 years	
DOSEair = (Cair*(BR/BW)*A*EF*10^{-6})			1.597E-05		6.605E-06	

Risk = DOSEair * CPF * ASF * ED/AT * FAH			5.420E-07		1.061E-06	
Total Cancer Risk (per million)			0.5420		1.0607	
Cancer Risk Threshold	**10**					

Chronic Noncancer Hazard		
Hazard Quotient = Ci/RELi =	**5.28E-03**	
Threshold:	**1.00**	
Ci - Concentration (annual average)	2.64E-02	µg/m3
RELi - Reference Exposure Level for Diesel Exhaust	5	

	10+6	1.00E+06	per million	
	CPF	1.1E+00	$(mg/kg/day)^{-1}$	Cancer Potency Factor for DPM
BR/BW	BR/BW (2 < 9 yrs)	631	L/kg bodyweight- day	Daily Breathing rate normalized to body weight
	BR/BW (16 < 30 yrs)	261		
	BR/BW (16 < 70 yrs)	233		
	10^{-6}	1.00E-06	Micrograms to milligrams conversions, liters to cubic meters conversion	
	Cair	0.0264	ug/m^3	Concentration in air (ug/m^3), modeled annual average concentration
	A	1	Inhalation absorption factor	
	EF	0.96	days/year	Exposure frequency (days/year)
ED	ED (2 < 9 years)	1	years	Exposure duration (years)
	ED (2 < 16, 16 < 30 years)	14		
	ED (16 - 70 years)	54		
	AT	70	years	Averaging time period over which exposure is averaged
ASF	ASF (2 - 16 years)	3	Age Sensitivity Factor	
	ASF (16 - 70 years)	1		
FAH	FAH (2 - 16 years)	0.72	Fraction of time spent at home (unitless)	
	FAH (16 - 70 years)	0.73		

Construction Cancer Risk by Year

Exposure Year	Age	Infant/Child - Exposure Information		Infant/Child Cancer Risk
		DPM Conc (ug/m3)		
		Year	Annual	(per million)
0	-0.25-0*	2024	0.03648	0.422
1	0-1	2024	0.03648	5.093
2	1-2	2025	0.01769	2.470
3	2-3	2026	0.02039	0.419
4	3-4	2027	0.02639	0.542
5	4-5	0	-	-
6	5-6	0	-	-
7	6-7	0	-	-
8	7-8	0	-	-
9	8-9	0	-	-
10	9-10	0	-	-
11	10-11	0	-	-
12	11-12	0	-	-
13	12-13	0	-	-
14	13-14	0	-	-
15	14-15	0	-	-
16	15-16	0	-	-
17	16-17	0	-	-
18	17-18	0	-	-
19	18-19	0	-	-
20	19-20	0	-	-
21	20-21	0	-	-
22	21-22	0	-	-
23	22-23	0	-	-
24	23-24	0	-	-
25	24-25	0	-	-
26	25-26	0	-	-
27	26-27	0	-	-
28	27-28	0	-	-
29	28-29	0	-	-
30	29-30	0	-	-
		Total Cancer Risk - Infant/Child		**8.945**
Threshold:	**10.0000**			
Cancer Burden:	**0.3204**		**24644**	**persons**

*3rd Trimester of pregnancy

La Brea Tar Pits Master Plan Operations Health Risk Calculations

Operation Year 2028		
PM_{10} (µg/m3)		
Annual Avg Concentration:	0.0132	µg/m3

Age Bin	Infant/Child				Adult	
	3rd trimester	0<2 years	2<9 years	2<16 years	16<30 years	16<70 years
DOSEair = (Cair*(BR/BW)*A*EF*10^{-6})	4.569E-06	1.380E-05	7.987E-06	7.240E-06	3.304E-06	2.949E-06

Risk = DOSEair * CPF * ASF * ED/AT * FAH	1.526E-07	3.686E-06	1.898E-06	3.441E-06	5.306E-07	1.827E-06
Total Cancer Risk (per million)	0.1526	3.6857	1.8977	3.4405	0.5306	1.8269

Total Cancer Risk (per million)		
70-year exposure	9.11E-06	9.11
30-year exposure	7.81E-06	7.81
9-year exposure	5.74E-06	5.74
	Cancer Risk Threshold	**10**

70-year exposure - Cancer Burden	0.22
30-year exposure - Cancer Burden	0.19
9-year exposure - Cancer Burden	0.14
Number of Persons	**24644**
Cancer Burden Threshold	**0.5**

Chronic Noncancer Hazard		
Hazard Quotient = Ci/RELi =	**2.64E-03**	
Threshold:	**1.00**	
Ci - Concentration (annual average)	1.32E-02	µg/m3
RELi - Reference Exposure Level for Diesel Exhaust	5	

	10+6	1.00E+06	per million	
	CPF	1.1E+00	$(mg/kg/day)^{-1}$	Cancer Potency Factor for DPM
BR/BW	BR/BW (3rd trimester)	361	L/kg bodyweight- day	Daily Breathing rate normalized to body weight
	BR/BW (0 < 2 yrs)	1090		
	BR/BW (2 < 9 yrs)	631		
	BR/BW (2 < 16 yrs)	572		
	BR/BW (16 < 30 yrs)	261		
	BR/BW (16 < 70 yrs)	233		
	10^{-6}	1.00E-06	Micrograms to milligrams conversions, liters to cubic meters conversion	
	Cair	0.0132	ug/m^3	Concentration in air (ug/m^3), modeled annual average concentration
	A	1	Inhalation absorption factor	
	EF	0.96	days/year	Exposure frequency (days/year)
ED	ED (3rd trimester)	0.25	years	Exposure duration (years)
	ED (0 < 2 years)	2		
	ED (2 < 9 years)	7		
	ED (2 < 16, 16 < 30 years)	14		
	ED (16 - 70 years)	54		
	AT	70	years	Averaging time period over which exposure is averaged
ASF	ASF (3rd trimester-2 yrs)	10	Age Sensitivity Factor	
	ASF (2 - 16 years)	3		
	ASF (16 - 70 years)	1		
FAH	FAH (3rd trimester-2 yrs)	0.85	Fraction of time spent at home (unitless)	
	FAH (2 - 16 years)	0.72		
	FAH (16 - 70 years)	0.73		