Appendix B Air Quality and Greenhouse Gas Emissions Analysis Technical Report for the Solana Torrance Project

Appendices

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Air Quality and Greenhouse Gas Emissions Analysis Technical Report for the Solana Torrance Project City of Torrance, California

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
°C	degrees Celsius
°F	degrees Fahrenheit
$\mu g/m^3$	micrograms per cubic meter
AB	Assembly Bill
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
amsl	above mean sea level
AQMP	Air Quality Management Plan
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CALGreen	California's Green Building Standards
CalRecycle	California Department of Resources Recycling and Recovery
CAP	climate action plan
CARB	California Air Resources Board
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFC	chlorofluorocarbons
CH_4	methane
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
CY	cubic yard
DPM	diesel particulate matter
EO	Executive Order
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gas
GWP	global warming potential
HAP	hazardous air pollutant
HCFC	hydrochlorofluorocarbons
HFC	hydrofluorocarbon
HRA	health risk assessment
LCFS	Low Carbon Fuel Standard
LOS	level of service
LST	localized significance thresholds
mph	miles per hour
MPO	metropolitan planning organization
MMT	million metric ton
MT	metric ton
N_2O	nitrous oxide

Acronym/Abbreviation	Definition
NAAQS	National Ambient Air Quality Standards
NF_3	nitrogen trifluoride
NHTSA	National Highway Traffic Safety Administration
NO	nitric oxide
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
O_3	ozone
PFC	perfluorocarbon
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to 10 microns
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to 2.5 microns
ppb	parts per billion
ppm	parts per million
RCP	Regional Comprehensive Plan
RPS	Renewables Portfolio Standard
RTP	regional transportation plan
SB	Senate Bill
SBCCOG	South Bay Cities Council of Governments
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCS	sustainable communities strategy
SF_6	sulfur hexafluoride
SO_2	sulfur dioxide
SO_x	sulfur oxides
SRA	source-receptor area
TAC	toxic air contaminant
TIS	traffic impact study
VMT	vehicle miles traveled
VOC	volatile organic compound
ZNE	zero net energy
ZEV	Zero-Emissions Vehicle

EXECUTIVE SUMMARY

The purpose of this technical report is to assess the potential air quality and greenhouse gas (GHG) emissions impacts associated with implementation of the proposed Solana Torrance Project (project). This assessment uses the significance thresholds in Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.).

Project Overview

The project site is located at the southwest corner of the intersection of Hawthorne Boulevard and Via Valmonte in the City of Torrance (City) in Los Angeles County, California. The project site encompasses approximately 24.68 acres, which is currently vacant.

The project is a 248-unit multifamily residential development, which includes four- and five-story residential structures constructed over at-grade parking garages. The project's residential unit mix would include 135 one-bedroom units and 113 two-bedroom units (Withee Malcom 2017). A total of 7,475 square feet is allocated for a leasing office and community room. A freestanding, five level on-grade parking structure with a rooftop outdoor recreation area is also proposed at the rear of the planned community. A total of 484 parking spaces would be provided by a combination of surface parking and in the parking structures. The project's estimated development area is 5.71 acres, which is proposed to occur within a disturbed and terraced area along the northeastern portion of the project development footprint, east of a moderate to steep hillside. The project would preserve 18.97 acres of the 24.68-acre property as natural open space.

The project site is located within the South Coast Air Basin and is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). Construction and operational criteria air pollutant and GHG emissions were estimated using the California Emissions Estimator Model Version 2016.3.2, consistent with the SCAQMD guidance.

Air Quality

The air quality impact analysis evaluated the potential for adverse impacts to air quality due to construction and operational emissions resulting from the project. Impacts were evaluated for their significance based on the SCAQMD mass daily criteria air pollutant thresholds of significance (SCAQMD 1993, as revised in March 2015). Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. Criteria air pollutants include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM_{10}), particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$), and lead. Pollutants that are evaluated include volatile organic compounds (VOCs) (also referred to as reactive organic gases), oxides of nitrogen (NO_x), CO, sulfur oxides (SO_x), PM_{10}, and $PM_{2.5}$. VOCs and NO_x are important because they are precursors to O_3.

Air Quality Plan Consistency

SCAQMD has established two criteria to evaluate the potential for the proposed project to conflict with the applicable air quality plan, which is the SCAQMD 2016 Air Quality Management Plan (AQMP) (SCAQMD 1993, 2017). Regarding Consistency Criterion No. 1, the project would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations as supported in the analysis presented in this technical report, which demonstrates that estimated project-generated construction and operational emissions would not exceed the SCAQMD mass daily emissions thresholds.

Regarding Consistency Criterion No. 2, the site is currently designated low density residential (R-LO), which could have a population of 582 people based on a maximum density of 9 units per acre, and the project is requesting a General Plan Amendment to low-medium density residential (R-LM), which would have a proposed population of 722 persons. This would result in an increased population of 140 people for the project site. However, the U.S. Census estimated a population of 146,758 for Torrance as of July 1, 2017, and housing units of 58,585 through 2016. These estimates fell short of the City's Housing Element update (adopted October 2013 and good through December 2021), which projected a population of 155,464 by 2020 that equates to an increase of 8,706 population over the 2017 Census. Since the City has not experienced nor entitled more than 500 housing units since the Housing Element update, the City's population projections would accommodate the additional 140 persons at the project site. As such, the proposed project would not exceed the assumptions in the 2016 AQMP or increments based on the year of project buildout and phase because implementation of the project would not exceed the demographic growth forecasts in the Southern California Association of Governments (SCAG) 2016 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS), which is based on general plans for cities and counties in the SCAB. Therefore, the project would also be consistent with the SCAQMD 2016 AQMP, which based future emission estimates on the SCAG 2016 RTP/SCS.

Based on these considerations, impacts related to the project's potential to conflict with or obstruct implementation of the applicable air quality plan would be less than significant.

Construction Criteria Air Pollutant Emissions

Construction of the project would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment, soil disturbance, and VOC off-gassing) and off-site sources (i.e., on-road haul trucks, vendor trucks, and worker vehicle trips). Estimated maximum daily construction emissions would not exceed the SCAQMD significance thresholds for VOC, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$ during construction in all construction years.

Operational Criteria Air Pollutant Emissions

Operational year 2019 was assumed consistent with the traffic impact study prepared for the project (KHR Associates 2018a). Operation of the project would generate operational criteria air pollutants from mobile sources (vehicles), area sources (consumer product use, architectural coatings, and landscape maintenance equipment), and energy (natural gas). Estimated maximum daily operational emissions would not exceed the SCAQMD operational significance thresholds for VOC, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$.

Exposure of Sensitive Receptors

SCAQMD recommends the evaluation of localized NO_2, CO, PM_{10}, and $PM_{2.5}$ impacts as a result of construction activities to sensitive receptors in the immediate vicinity of a project site. As such, a localized emissions impact analysis has been prepared that compares project-generated emissions during construction to SCAQMD localized significance thresholds (LSTs) to determine potential impacts to nearby sensitive receptors during construction of the project. The impacts were analyzed using methods consistent with those in SCAQMD's Final LST Methodology (2009). In summary, construction activities would not generate emissions in excess of the SCAQMD site-specific LSTs; therefore, site-specific construction impacts during construction of the project would be less than significant.

Based on a site-specific investigation performed by Geocon West, diatomaceous soils are primarily confined to Lot 2, with several minimal areas in Lot 1 where it abuts Lot 2 (Geocon West Inc. 2018a). In summary, the only localized area on Lot 1 (southwest corner of the proposed parking structure) where 3 to 6 feet of slough would be disturbed (excavated) as part of the grading operations would be located a substantial distance of about 512 feet from the nearest off-site receptor at 4464 Via Pinzon. The nearest receptor is also upwind of the project site, which means that the prevailing winds would typically blow potential emissions away from the residence and back toward the project site. Overall, based on the minimal potential disturbance of slough material described in the geotechnical report, as well as the distance to off-site receptors, the prevailing wind direction, and the extensive fugitive dust controls to be implemented during project construction, project construction activities would not result in the exposure of sensitive receptors to substantial concentrations of diatomaceous soils or amorphous silica.

Operation of the project would not expose sensitive receptors to localized high concentrations of CO or contribute traffic volumes to intersections that would cause a CO hotspot. As neither the 1-hour nor the 8-hour CO California Ambient Air Quality Standards would be equaled or exceeded at any of the studied intersections, potential CO hotspot impacts would be less than significant.

Impacts related to cancer risk and chronic hazard from diesel particulate matter, which is a toxic air contaminant (TAC), would be below the SCAQMD's health risk thresholds during construction activities; therefore, construction health risk impacts would be less than significant. No long-term sources of TAC emissions are anticipated during operation of the project because the project would only include residential units and associated uses; the project would not include heavy industrial uses or other land uses typically associated with stationary sources and TACs. Additionally, the project would not be located next to a major source of TACs. As such, the project would not result in substantial TAC emissions that may affect nearby receptors, nor would the future project residents be exposed to nearby sources of substantial TACs. Operational health risk impacts would be less than significant.

Odors

Potential odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment, architectural coatings, and asphalt pavement application, which would disperse rapidly from the project site and generally occur at magnitudes that would not affect substantial numbers of people. Impacts associated with odors during construction would be less than significant. The project is a residential development that would not include land uses with sources that have the potential to generate substantial odors and impacts associated with odors during operation would be less than significant.

Cumulative Impacts

The potential for the project to result in a cumulatively considerable impact, per the SCAQMD guidance and thresholds, is based on the project's potential to exceed the project-specific daily thresholds. As discussed previously, maximum construction and operational emissions would not exceed the SCAQMD significance thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$. Therefore, the project would not result in a cumulatively considerable increase in criteria air pollutants.

Greenhouse Gas Emissions

Global climate change is primarily considered a cumulative impact, but must also be evaluated on a project-level under CEQA. A project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of GHG emissions. GHGs are gases that absorb infrared radiation in the atmosphere. Principal GHGs regulated under state and federal law and regulations include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). GHG emissions are measured in metric tons of CO_2 equivalent (MT CO_2e), which account for weighted global warming potential factors for CH_4 and N_2O.

Project-Generated Construction and Operational Greenhouse Gas Emissions

The threshold applied to assess the potential for the project to generate GHG emissions either directly or indirectly that may have a significant impact on the environment was the SCAQMD threshold of 3,000 MT CO_2e per year. Pursuant to SCAQMD recommendation, construction emissions were 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 (SCAQMD 2008).

Construction of the project would result in GHG emissions primarily associated with use of off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. Total project-generated GHG emissions during construction were estimated to be 1,583 MT CO_2e over the construction period. Estimated project-generated construction emissions amortized over 30 years would be approximately 52.78 MT CO_2e per year.

The project would generate operational GHG emissions from area sources (landscape maintenance), energy sources (natural gas and electricity), mobile sources, solid waste, and water supply and wastewater treatment. Estimated annual project-generated operational GHG emissions would be approximately 3,013 MT CO_2e per year. After accounting for GHG reductions from inclusion of 25 electric vehicle charging spaces at the project, per CALGreen Tier 1 requirements, and summing the amortized project construction emissions, total GHGs generated by the project would be approximately 2,983 MT CO_2e per year. As such, annual operational GHG emissions with amortized construction emissions would not exceed the SCAQMD threshold of 3,000 MT CO_2e per year. Therefore, the project-generated GHG emissions would result in a less than significant impact.

Consistency with Applicable Greenhouse Gas Reduction Plans

The City, in coordination with the South Bay Cities Council of Governments, has developed a climate action plan (CAP) to reduce GHG emissions within the City. However, this CAP is not a Qualified GHG Emissions Reduction Plan under CEQA per the requirements outlined in CEQA Guidelines Section 15183.5(D); therefore, no CEQA document can tier from the City CAP. As such, at this time, no mandatory GHG plans, policies, or regulations or finalized agency guidelines would apply to implementation of the project. Nonetheless, development of the project site would be consistent with the City CAP and the SCAG 2016 RTP/SCS by avoiding sprawling development and through incorporation of energy and water efficient features. As such, the project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs and no mitigation is required. This impact would be less than significant.

1 INTRODUCTION

1.1 Report Purpose and Scope

The purpose of this technical report is to assess the potential air quality and greenhouse gas (GHG) emissions impacts associated with implementation of the proposed Solana Torrance Project (project). This assessment uses the significance thresholds in Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.), and is based on the emissions-based significance thresholds recommended by the South Coast Air Quality Management District (SCAQMD) and other applicable thresholds of significance.

This introductory section provides a description of the project and the project location. Chapter 2, Air Quality, describes the air quality–related environmental setting, regulatory setting, existing air quality conditions, and thresholds of significance and analysis methodology, and presents an air quality impact analysis per Appendix G of the CEQA Guidelines. Chapter 3, Greenhouse Gas Emissions, follows the same format as Chapter 2 and similarly describes the GHG emissions–related environmental setting, regulatory setting, existing climate changes conditions, and thresholds of significance and analysis methodology, and presents a GHG emissions impact analysis per Appendix G of the CEQA Guidelines. Chapter 4, References Cited, includes a list of the sources cited in this technical report, and Chapter 5, List of Preparers, includes a list of those who prepared this technical report.

The analysis in this technical report incorporates project data as provided on the site plans prepared by Withee Malcom Architects (Withee Malcom 2017) and the traffic impact study (TIS) prepared by KHR Associates (KHR Associates 2018a).

1.2 Regional and Local Setting

The approximately 24.68-acre Solana Torrance property is located on privately owned land located west and north of Hawthorne Boulevard, south of Via Valmonte, and east of Palos Verdes Drive North within the City of Torrance (City) in southwestern Los Angeles County, approximately 18 miles southwest of downtown Los Angeles (Figure 1, Regional Map). The property is directly adjacent to and west of State Route 107/Hawthorne Boulevard and approximately 0.5 miles south of State Route 1 (Figure 2, Vicinity Map). More specifically, the property is located northeast of Palos Verdes Estates and north of Rolling Hills Estates. Ernie J. Howlett Park is located directly to the south.

The project is planned to occur within an approximate 5.71-acre area within an old mining pit and terraced area located southwest of the intersection of Via Valmonte and State Route 107/Hawthorne Boulevard in the northeastern portion of the property. Major circulation corridors surrounding the project in less than a 1-mile radius include Hawthorne Boulevard and Via Valmonte adjacent to the project site. Adjacent land uses include residential to the north and west, residential and light commercial/office to the east, and vacant land/hillside to the south.

The General Plan (City of Torrance 2010) land use designation for the project development footprint is low density residential (R-LO), which is located within the Hillside Neighborhood District (City of Torrance 2010). The project is within an area zoned as light agricultural (A-1) within the City of Torrance Property Zoning Map (City of Torrance 2015).

The project site is located within the South Coast Air Basin (SCAB), which includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties.

1.3 Project Description

The project is a 248-unit multifamily residential development, which includes four- and five-story residential structures constructed over at-grade parking garages. The project's residential unit mix would include 135 one-bedroom units and 113 two-bedroom units (Withee Malcom 2017). In addition to the 223,525 square feet of residential living space, the project would include 7,475 square feet for a leasing office and community room. A freestanding, five-level on-grade parking structure with a rooftop outdoor recreation area is also proposed at the rear of the planned community. A total of 484 parking spaces would be provided by a combination of surface parking and in the parking structures.

The project's estimated development area, which is proposed to occur within a disturbed and terraced area along the northeastern portion of the project development footprint, is 5.71 acres east of a moderate to steep hillside. The project would preserve 18.97 acres of the 24.68-acre property as natural open space. The project's density is approximately 10 dwelling units per acre, assuming the project site area of 24.68 acres. The project's density within the 5.71-acre Lot 1, which is the only lot in which project development would occur, is approximately 43.4 dwelling units per acre.[1] Table 1 provides a summary of the proposed residential units and parking spaces provided.

---

1 Lot 1 represents the developed project site area, which is 5.71 acres. Lot 2 is proposed as open space reserve totaling 6.0 acres and Lot 3 is proposed as open space reserve totaling 12.92 acres. Because no development would occur within Lots 2 and 3, the density is 0 dwelling units per acre within Lots 2 and 3.

Table 1
Project Residential and Parking Land Use Breakdown

Residential Units and Amenities			
Plan Description	*Quantity (Number of Dwelling Units)*	*Gross Unit Area (Square Feet)*	*Floor Area (Square Feet)*
1A. 1 bedroom + 1 bath	84	705	59,220
1B. 1 bedroom + 1 bath and mezzanine	47	745	35,015
1C. 1 bedroom + 1 bath	4	735	2,940
2A. 2 bedroom + 2 bath	96	1,115	107,040
2B. 2 bedroom + 2 bath and mezzanine	9	1,110	9,990
2C. 2 bedroom + 2 bath	4	1,130	4,520
2D. 2 bedroom + 2 bath	4	1,200	4,800
Residential units subtotal	*248*	*901* (weighted average)	*223,525*
Circulation (enclosed corridors), lobby, stairs, elevator, storage, and mechanical space			*53,244*
Residential area subtotal			*276,769*
Leasing office and community room			*7,475*
Building area total[a]			284,244

Parking		
Parking Area	*Parking Provided (Number of Spaces)*	*Floor Area (Square Feet)*
Building A parking garage	62	24,800
Building B parking garage	86	33,950
Building C parking garage	49	18,925
Building D parking garage	242	96,800
Subtotal	*439*	*174,475*
On-grade parking	45	64,383[b]
Total	484	238,858

Source: Withee Malcom 2017.
Notes:
[a] Building area total square footage does not include parking garage, which is presented separately in Table 1, or patio and balcony space, which is not included as habitable space in this analysis,
[b] On-grade parking square footage includes street area in addition to open parking. Assuming an average of 400 square feet per parking space, 45 spaces would total 18,000 square feet. As such, the estimate of 64,383 square feet conservatively includes additional space that is not intended for parking only, including driveway areas.

1.4 Dust Control Strategies

The project would include various construction dust control strategies as a project design feature. Compliance with these dust control measures would be identified on grading plan approvals. The following dust control strategies are proposed:

a. During clearing, grading, earthmoving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems shall be used to prevent dust from leaving the site and to create a crust after each day's activities cease.

b. During construction, water trucks or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas later in the morning, after work is completed for the day, and whenever winds exceed 15 miles per hour (mph) during active operations. Watering of active disturbance areas, including active grading areas and unpaved roads, would occur approximately every two hours of active operations, approximately three times per work day (at a minimum).

c. Speeds on unpaved roads shall be reduced to less than 15 mph.

d. All grading and excavation operations shall be halted when wind speeds exceed 25 mph.

e. Dirt and debris spilled onto paved surfaces at the project site and on the adjacent roadways shall be swept, vacuumed, and/or washed at the end of each workday.

f. All trucks hauling dirt, sand, soil, or other loose material to and from the construction site shall be covered and/or a minimum 2 feet of freeboard shall be maintained.

A geotechnical letter was prepared by Geocon West Inc. to evaluate the potential for diatomaceous soils to be exposed during grading of the project site. An exhibit was also included with the geotechnical report and added as Figure 3, Geologic Overlay Reference Exhibit, to this technical report. Specifically, the geotechnical report states (Geocon West Inc. 2018a):

> Based on our investigations at the site, the materials encountered within Lot 1 are predominantly artificial fill and Pleistocene age sediments consisting of Marine Sand and San Pedro Sand. The artificial fill generally consists of silty sand and sand with lesser amounts of clayey sand, sandy clay, sandy silt, and silt. The Pleistocene age formations consist primarily of sand, silty sand and sandy silt. Slough is locally present along the southern boundary of Lot 1 where it abuts Lot 2. The slough is comprised of debris derived from the Monterey Formation bedrock exposed on the north-facing slope within Lot 2. Also, in the southwestern portion of Lot 1, there is a localized exposure of Monterey Formation. The Monterey Formation is

> composed of interbedded sandstone, siltstone, and diatomaceous siltstone. The diatomaceous siltstone that occurs within this formation is composed of predominantly silt and clay with varying amounts diatoms in the form of amorphous silica.
>
> [T]here are very limited exposures of Monterey Formation or slough (potential diatomaceous soils) within Lot 1. Based on the grading plans, the majority of these exposures will either 1) have fill placed over them or 2) will be left in place and not disturbed. There is only one localized area (at the southwest corner of the proposed parking structure) where approximately 3 to 6 feet of the slough will be disturbed (excavated) as part of the planned grading operations. Elsewhere, the proposed grading within Lot 1 will locally encroach into the slough only a few horizontal feet where the slough will be "smoothed out" to join existing grades at the southern daylight line.
>
> Therefore, we conclude that only very minor, localized areas of potentially diatomaceous soils will be disturbed as part of the proposed grading. Considering the negligible volume of diatomaceous soils that may be disturbed during grading operations, specific mitigation for dust control in these areas can be designed and implemented by the grading contractor to reduce the potential for airborne materials.

The extensive construction dust control strategies described above would ensure that any generation of potential airborne diatomaceous soils or amorphous silica in dust would be minimized such that project construction activities would not result in the exposure of sensitive receptors to substantial concentrations of these materials.

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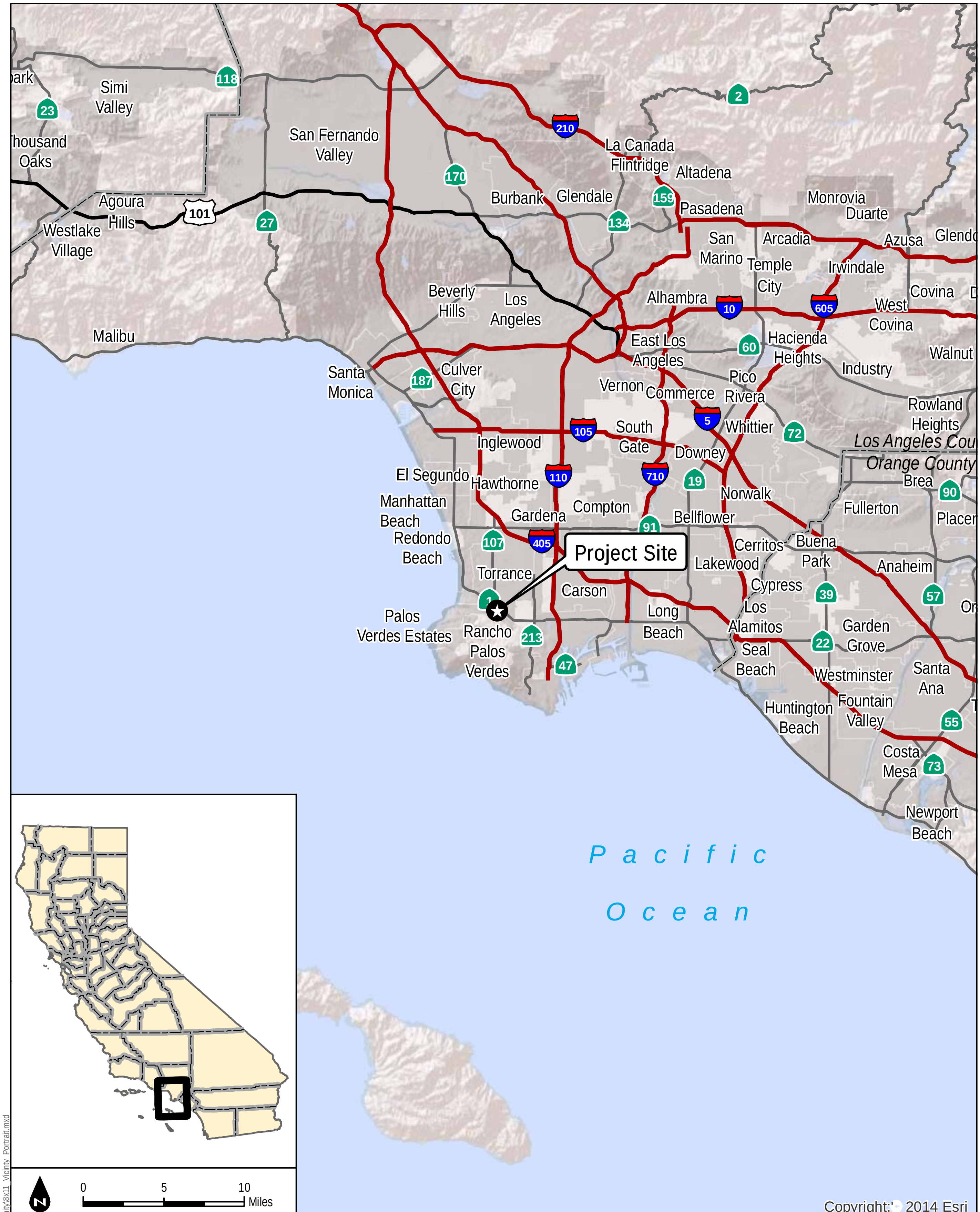

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FIGURE 1

Regional Map

Solana Torrance Project

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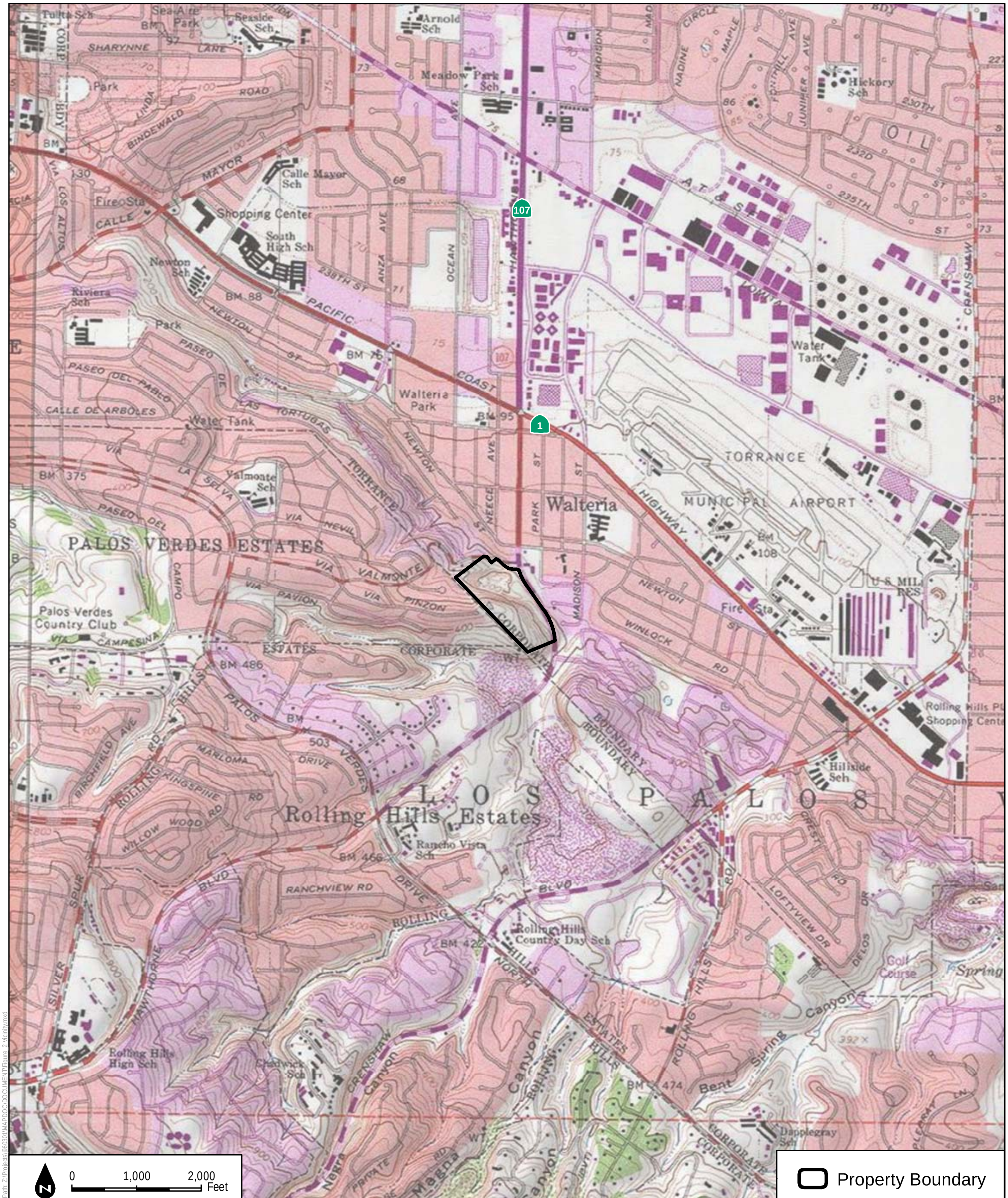

SOURCE: USGS 7.5-Minute Series Torrance Quadrangle

FIGURE 2

Vicinity Map

Solana Torrance Project

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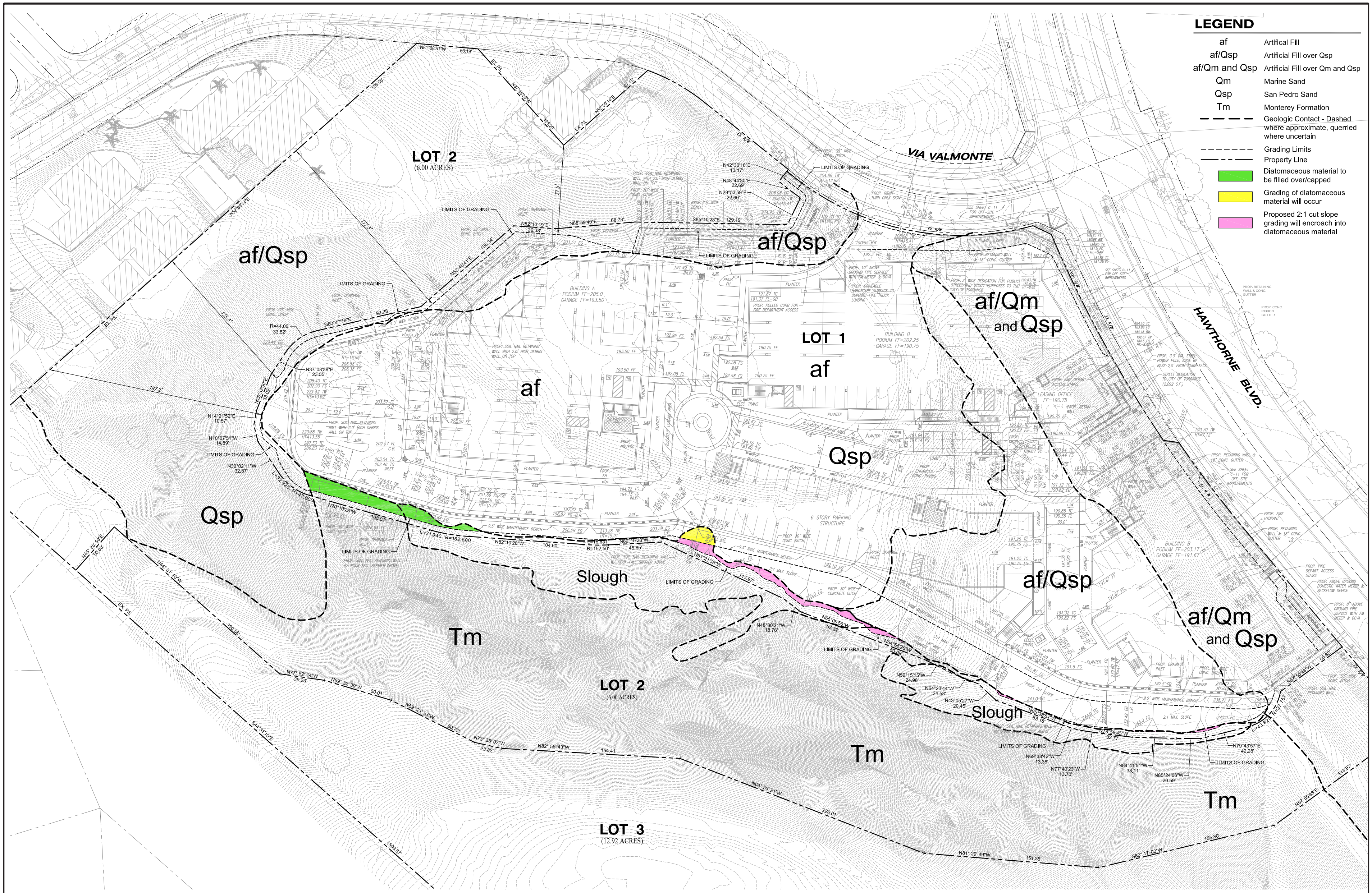

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SOURCE: Geocon West, 2018

FIGURE 3
Geologic Overlay Reference Exhibit

Solana Torrance Project

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2 AIR QUALITY

2.1 Environmental Setting

As stated previously, the project site is located within the SCAB. The SCAB is a 6,745-square-mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east.

2.1.1 Meteorological and Topographical Conditions

The primary factors that determine air quality are the locations of air pollutant sources and the amount of pollutants emitted. Meteorological and topographical conditions, however, are also important. Factors such as wind speed and direction, air temperature gradients and sunlight, and precipitation and humidity interact with physical landscape features to determine the movement and dispersal of air pollutants. The SCAB's air pollution problems are a consequence of the combination of emissions from the nation's second largest urban area, meteorological conditions adverse to the dispersion of those emissions, and mountainous terrain surrounding the SCAB that traps pollutants as they are pushed inland with the sea breeze (SCAQMD 2017). Meteorological and topographical factors that affect air quality in the SCAB are described below.[2]

Climate

The SCAB is characterized as having a Mediterranean climate (typified as semiarid with mild winters, warm summers, and moderate rainfall). The general region lies in the semi-permanent high-pressure zone of the eastern Pacific; as a result, the climate is mild and tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The extent and severity of the air pollution problem in the SCAB is a function of the area's natural physical characteristics (e.g., weather and topography) and of manufactured influences (e.g., development patterns and lifestyle). Moderate temperatures, comfortable humidity, and limited precipitation characterize the climate in the SCAB. The average annual temperature varies little throughout the SCAB, averaging 75°F. However, with a less-pronounced oceanic influence, the eastern inland portions of the SCAB show greater variability in annual minimum and maximum temperatures. All portions of the SCAB have recorded temperatures over 100°F in recent years. Although the SCAB has a semiarid climate, the air near the surface is moist because of the presence of a shallow marine layer. Except for infrequent periods when dry air is brought into the SCAB by offshore winds, the ocean effect is dominant. Periods with heavy fog are frequent, and low stratus clouds, occasionally referred to as

[2] The discussion of meteorological and topographical conditions of the SCAB is based on information provided in the *Final 2016 Air Quality Management Plan* (SCAQMD 2017).

"high fog," are a characteristic climate feature. Annual average relative humidity is 70% at the coast and 57% in the eastern part of the SCAB. Precipitation in the SCAB is typically 9 to 14 inches annually and is rarely in the form of snow or hail because of typically warm weather. The frequency and amount of rainfall is greater in the coastal areas of the SCAB.

The average low in the City is reported at 44.2°F, in January, and the average high is 78.6°F, in August (City of Torrance 2009a). In contrast to a very steady pattern of temperature, rainfall is seasonally and annually highly variable. Almost all rain falls from November to April. Summer rainfall is normally restricted to widely scattered thundershowers near the coast, with slightly heavier shower activity in the east and over the mountains. Rainfall averages around 13.58 inches per year in the City (City of Torrance 2009a).

Sunlight

The presence and intensity of sunlight are necessary prerequisites for the formation of photochemical smog. Under the influence of the ultraviolet radiation of sunlight, certain "primary" pollutants (mainly reactive hydrocarbons and oxides of nitrogen (NO_x)[3]) react to form "secondary" pollutants (primarily oxidants). Since this process is time dependent, secondary pollutants can be formed many miles downwind of the emission sources. Southern California also has abundant sunshine, which drives the photochemical reactions that form pollutants such as ozone (O_3) and a substantial portion of fine particulate matter ($PM_{2.5}$; particulate matter with an aerodynamic diameter less than or equal to 2.5 microns). In the SCAB, high concentrations of O_3 are normally recorded during the late spring, summer, and early autumn months, when more intense sunlight drives enhanced photochemical reactions. Due to the prevailing daytime winds and time-delayed nature of photochemical smog, oxidant concentrations are highest in the inland areas of Southern California.

Temperature Inversions

Under ideal meteorological conditions and irrespective of topography, pollutants emitted into the air mix and disperse into the upper atmosphere. However, the Southern California region frequently experiences temperature inversions in which pollutants are trapped and accumulate close to the ground. The inversion, a layer of warm, dry air overlaying cool, moist marine air, is a normal condition in coastal Southern California. The cool, damp, and hazy sea air capped by coastal clouds is heavier than the warm, clear air, which acts as a lid through which the cooler marine layer cannot rise. The height of the inversion is important in determining pollutant concentration. When the inversion is approximately 2,500 feet above mean sea level (amsl), the sea breezes carry the pollutants inland to escape over the mountain slopes or through the passes.

3 NO_x is a general term pertaining to compounds of nitric oxide (NO), nitrogen dioxide (NO_2), and other oxides of nitrogen.

At a height of 1,200 feet amsl, the terrain prevents the pollutants from entering the upper atmosphere, resulting in the pollutants settling in the foothill communities. Below 1,200 feet amsl, the inversion puts a tight lid on pollutants, concentrating them in a shallow layer over the entire coastal basin. Usually, inversions are lower before sunrise than during the daylight hours.

Mixing heights for inversions are lower in the summer and inversions are more persistent, being partly responsible for the high levels of O_3 observed during summer months in the SCAB. Smog in Southern California is generally the result of these temperature inversions combining with coastal day winds and local mountains to contain the pollutants for long periods, allowing them to form secondary pollutants by reacting in the presence of sunlight. The SCAB has a limited ability to disperse these pollutants due to typically low wind speeds and the surrounding mountain ranges.

As with other cities within the SCAB, the City is susceptible to air inversions, which trap a layer of stagnant air near the ground where pollutants are further concentrated. These inversions produce haziness, which is caused by moisture, suspended dust, and a variety of chemical aerosols emitted by trucks, automobiles, furnaces, and other sources. Elevated coarse particulate matter (PM_{10}; particulate matter with an aerodynamic diameter less than or equal to 10 microns) and $PM_{2.5}$ concentrations can occur in the SCAB throughout the year, but occur most frequently in fall and winter. Although there are some changes in emissions by day of the week and season, the observed variations in pollutant concentrations are primarily the result of seasonal differences in weather conditions.

2.1.2 Pollutants and Effects

2.1.2.1 Criteria Air Pollutants

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and state standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include O_3, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), PM_{10}, $PM_{2.5}$, and lead. These pollutants, as well as toxic air contaminants (TACs), are discussed in the following paragraphs.[4] In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants.

[4] The descriptions of the criteria air pollutants and associated health effects are based on the U.S. Environmental Protection Agency's Criteria Air Pollutants (EPA 2016a) and the California Air Resources Board's Glossary of Air Pollutant Terms (CARB 2016a).

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 NO_x and volatile organic compounds (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).[5] 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 2013). These health problems are particularly acute in sensitive receptors such as the sick, the elderly, and young children.

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 2016b).

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

5 The troposphere is the layer of the Earth's atmosphere nearest to the surface of the Earth. The troposphere extends outward about 5 miles at the poles and about 10 miles at the equator.

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.

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.

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}) consists of particulate matter that 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 ($PM_{2.5}$) consists of particulate matter that 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 (SO_x), 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_{10} and $PM_{2.5}$ (EPA 2009).

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.

Volatile Organic Compounds. Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of O_3 are referred to and regulated as VOCs (also referred to as reactive organic gases). Combustion engine exhaust, oil refineries, and fossil-fueled power plants are the sources of hydrocarbons. Other sources of hydrocarbons include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint.

The primary health effects of VOCs result from the formation of O_3 and its related health effects. High levels of VOCs in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered TACs. There are no separate health standards for VOCs as a group.

2.1.2.2 Non-Criteria Air Pollutants

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 and/or chronic noncancer health effects. A toxic substance released into the air is considered a TAC. 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 hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years.

Examples include certain aromatic and chlorinated hydrocarbons, 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 systems and may be experienced on either short-term (acute) or long-term (chronic) exposure to a given TAC.

Diesel Particulate Matter. Diesel particulate matter (DPM) is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases, gas and particle, both of which contribute to health risks. More than 90% of DPM is less than 1 micrometer in diameter (about 1/70th the diameter of a human hair), and thus is a subset of $PM_{2.5}$ (CARB 2016b). DPM is typically composed of carbon particles ("soot," also called black carbon, or BC) and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene (CARB 2016b). The CARB classified "particulate emissions from diesel-fueled engines" (i.e., DPM; 17 CCR 93000) as a TAC in August 1998. DPM is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses, and cars and off-road diesel engines including locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70% of all airborne cancer risk in California is associated with DPM (CARB 2000). To reduce the cancer risk associated with DPM, CARB adopted a diesel risk reduction plan in 2000 (CARB 2000). Because it is part of $PM_{2.5}$, DPM also contributes to the same non-cancer health effects as $PM_{2.5}$ exposure. These effects include premature death; hospitalizations and emergency department visits for exacerbated chronic heart and lung disease, including asthma; increased respiratory symptoms; and decreased lung function in children. Several studies suggest that exposure to DPM may also facilitate development of new allergies (CARB 2016b). Those most vulnerable to non-cancer health effects are children, whose lungs are still developing, and the elderly, who often have chronic health problems.

Odorous Compounds. 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.

2.1.3 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) (CARB 2005). The SCAQMD identifies sensitive receptors as residences, schools, playgrounds, childcare centers, long-term healthcare facilities, rehabilitation centers, convalescent centers, and retirement homes (SCAQMD 1993). Residential land uses are located to the north, east, and west of the project. The closest off-site sensitive receptors to the project site include residences located approximately 77 feet north of the project's limits of construction.

2.2 Regulatory Setting

2.2.1 Federal Regulations

2.2.1.1 Criteria Air Pollutants

The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. EPA is responsible for implementing most aspects of the Clean Air Act, including setting National Ambient Air Quality Standards (NAAQS) for major air pollutants; setting hazardous air pollutant (HAP) standards; approving state attainment plans; setting motor vehicle emission standards; issuing stationary source emission standards and permits; and establishing acid rain control measures, stratospheric O_3 protection measures, and enforcement provisions. Under the Clean Air Act, NAAQS are established for the following criteria pollutants: O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O_3, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The Clean Air Act requires EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a state implementation plan that demonstrates how those areas will attain the standards within mandated time frames.

2.2.1.2 Hazardous Air Pollutants

The 1977 federal Clean Air Act amendments required EPA to identify national emission standards for hazardous air pollutants to protect public health and welfare. HAPs include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 federal Clean Air Act Amendments, which expanded the control program for HAPs, 189 substances and chemical families were identified as HAPs.

2.2.2 State Regulations

2.2.2.1 Criteria Air Pollutants

The federal Clean Air Act delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the California Clean Air Act of 1988, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products.

CARB has established California Ambient Air Quality Standards (CAAQS), which are generally more restrictive than the NAAQS. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered "in attainment" if pollutant levels are continuously below the CAAQS and violate the standards no more than once each year. The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and $PM_{2.5}$ and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in Table 2.

Table 2
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	*Primary*[c,d]	*Secondary*[c,e]
O_3	1 hour	0.09 ppm (180 μg/m³)	—	Same as primary standard[f]
	8 hours	0.070 ppm (137 μg/m³)	0.070 ppm (137 μg/m³)[f]	
NO_2[g]	1 hour	0.18 ppm (339 μg/m³)	0.100 ppm (188 μg/m³)	Same as primary standard
	Annual arithmetic mean	0.030 ppm (57 μg/m³)	0.053 ppm (100 μg/m³)	
CO	1 hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	None
	8 hours	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	
SO_2[h]	1 hour	0.25 ppm (655 μg/m³)	0.075 ppm (196 μg/m³)	—
	3 hours	—	—	0.5 ppm (1,300 μg/m³)
	24 hours	0.04 ppm (105 μg/m³)	0.14 ppm (for certain areas)[g]	—
	Annual	—	0.030 ppm (for certain areas)[g]	—
PM_{10}[i]	24 hours	50 μg/m³	150 μg/m³	Same as primary standard
	Annual arithmetic mean	20 μg/m³	—	
$PM_{2.5}$[i]	24 hours	—	35 μg/m³	Same as primary standard
	Annual arithmetic mean	12 μg/m³	12.0 μg/m³	15.0 μg/m³
Lead[j,k]	30-day average	1.5 μg/m³	—	—
	Calendar quarter	—	1.5 μg/m³ (for certain areas)[k]	Same as primary standard

Table 2
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	*Primary[c,d]*	*Secondary[c,e]*
	Rolling 3-month average	—	0.15 μg/m³	
Hydrogen sulfide	1 hour	0.03 ppm (42 μg/m³)	—	—
Vinyl chloride[j]	24 hours	0.01 ppm (26 μg/m³)	—	—
Sulfates	24- hours	25 μg/m³	—	—
Visibility reducing particles	8 hour (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to the number of particles when the relative humidity is less than 70%	—	—

Source: CARB 2016c.

Notes: O_3 = ozone; ppm = parts per million by volume; μg/m³ = micrograms per cubic meter; NO_2 = nitrogen dioxide; CO = carbon monoxide; mg/m³= milligrams per cubic meter; SO_2 = sulfur dioxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; PST = Pacific Standard Time.

a California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, suspended particulate matter (PM_{10}, $PM_{2.5}$), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

b National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once per year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m³ is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

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

d National primary standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

e National secondary standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

f On October 1, 2015, the national 8-hour O_3 primary and secondary standards were lowered from 0.075 to 0.070 ppm.

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

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

i On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 μg/m³ to 12.0 μg/m³. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 μg/m³, as was the annual secondary standard of 15 μg/m³. The existing 24-hour PM_{10} standards (primary and secondary) of 150 μg/m³ were also retained. The form of the annual primary and secondary standards is the annual mean averaged over 3 years.

j CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

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

2.2.2.2 Toxic Air Contaminants

The state Air Toxics Program was established in 1983 under AB 1807 (Tanner). The California TAC list identifies more than 700 pollutants, of which carcinogenic and noncarcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. In accordance with AB 2728, the state list includes the (federal) HAPs. In 1987, the Legislature enacted the Air Toxics “Hot Spots” Information and Assessment Act of 1987 (AB 2588) to address public concern over the release of TACs into the atmosphere. AB 2588 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 hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years. TAC emissions from individual facilities are quantified and prioritized. “High-priority” facilities are required to perform a health risk assessment (HRA), and if specific thresholds are exceeded, the facility operator is required to communicate the results to the public in the form of notices and public meetings.

In 2000, CARB approved a comprehensive diesel risk reduction plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines (CARB 2000). 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, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-Road Diesel Vehicle Regulation, and the 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. There are several Airborne Toxic Control Measures that 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).

California Health and Safety Code Section 41700

This section of the Health and Safety Code states that a person shall not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any of those persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property. This section also applies to sources of objectionable odors.

2.2.3 Local Regulations

2.2.3.1 South Coast Air Quality Management District

SCAQMD is the regional agency responsible for the regulation and enforcement of federal, state, and local air pollution control regulations in the SCAB, where the project is located. SCAQMD operates monitoring stations in the SCAB, develops rules and regulations for stationary sources and equipment, prepares emissions inventory and air quality management planning documents, and conducts source testing and inspections. SCAQMD's Air Quality Management Plans (AQMPs) include control measures and strategies to be implemented to attain state and federal ambient air quality standards in the SCAB. SCAQMD then implements these control measures as regulations to control or reduce criteria pollutant emissions from stationary sources or equipment.

The most recent adopted AQMP is the 2016 AQMP (SCAQMD 2017), which was adopted by the SCAQMD governing board on March 3, 2017. The 2016 AQMP is a regional blueprint for achieving air quality standards and healthful air. The 2016 AQMP represents a new approach, focusing on available, proven, and cost effective alternatives to traditional strategies, while seeking to achieve multiple goals in partnership with other entities promoting reductions in GHGs and toxic risk, as well as efficiencies in energy use, transportation, and goods movement (SCAQMD 2017). Because mobile sources are the principal contributor to the SCAB's air quality challenges, SCAQMD has been and will continue to be closely engaged with CARB and EPA, who have primary responsibility for these sources. The 2016 AQMP recognizes the critical importance of working with other agencies to develop funding and other incentives that encourage the accelerated transition of vehicles, buildings, and industrial facilities to cleaner technologies in a manner that benefits not only air quality but also local businesses and the regional economy. These "win-win" scenarios are key to implementation of this 2016 AQMP with broad support from a wide range of stakeholders.

The previous AQMP was the 2012 AQMP, which was adopted in February 2013 (SCAQMD 2013). The 2012 AQMP proposed policies and measures to achieve federal and state standards for improved air quality in the SCAB and those portions of the Salton Sea Air Basin (formerly named the Southeast Desert Air Basin) that are under SCAQMD jurisdiction. The 2012 AQMP is designed to meet applicable federal and state requirements for O_3 and particulate matter. The 2012 AQMP documents that attainment of the federal 24-hour $PM_{2.5}$ standard is impracticable by 2015 and the SCAB should be classified as a Serious nonattainment area along with the appropriate federal requirements. The 2012 AQMP includes the planning requirements to meet the 1-hour O_3 standard. The 2012 AQMP demonstrates attainment of the federal 24-hour $PM_{2.5}$ standard by 2014 in the SCAB through adoption of all feasible measures. Finally, the 2012 AQMP updates the EPA-approved 8-hour O_3 control plan with new measures designed to reduce reliance on the Clean Air Act Section 182(e)(5) long-term measures for NO_x and VOC reductions. The 2012 AQMP reduction and control measures, which are outlined to mitigate emissions, are based on existing and projected land use and development. EPA, with a final ruling on April 14, 2016, approved the Clean Air Act planning requirements for the 24-hour $PM_{2.5}$ standard portion and on September 3, 2014, approved the 1-hour ozone Clean Air Act planning requirements.

Applicable Rules

Emissions that would result from mobile, area, and stationary sources during construction and operation of the project are subject to the rules and regulations of SCAQMD. The SCAQMD rules applicable to the project may include the following:

- **Rule 401 – Visible Emissions:** This rule establishes the limit for visible emissions from stationary sources.
- **Rule 402 – Nuisance:** This rule prohibits the discharge of air pollutants from a facility that cause injury, detriment, nuisance, or annoyance to the public or damage to business or property.
- **Rule 403 – Fugitive Dust:** This rule requires fugitive dust sources to implement best available control measures for all sources and prohibits all forms of visible particulate matter from crossing any property line. SCAQMD Rule 403 is intended to reduce PM_{10} emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust.
- **Rule 431.2 – Sulfur Content of Liquid Fuels:** The purpose of this rule is to limit the sulfur content in diesel and other liquid fuels for the purpose of reducing the formation of SO_x and particulates during combustion and of enabling the use of add-on control devices for diesel-fueled internal combustion engines. The rule applies to all refiners, importers, and other fuel suppliers such as distributors, marketers, and retailers, as well as to users of diesel, low-sulfur diesel, and other liquid fuels for stationary-source applications in the SCAQMD. The rule also affects diesel fuel supplied for mobile sources.
- **Rule 1110.2 – Emissions from Gaseous- and Liquid-Fueled Engines:** This rule applies to stationary and portable engines rated at greater than 50 horsepower. The purpose of Rule 1110.2 is to reduce NO_x, VOCs, and CO emissions from engines. Emergency engines, including those powering standby generators, are generally exempt from the emissions and monitoring requirements of this rule because they have permit conditions that limit operation to 200 hours or less per year as determined by an elapsed operating time meter.

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

2.2.3.2 Southern California Association of Governments

The Southern California Association of Governments (SCAG) is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SCAG serves as the federally designated metropolitan planning organization (MPO) for the Southern California region and is the largest MPO in the United States.

With respect to air quality planning and other regional issues, SCAG has prepared the 2008 Regional Comprehensive Plan: Helping Communities Achieve a Sustainable Future (2008 RCP) for the region (SCAG 2008). The 2008 RCP sets the policy context in which SCAG participates and responds to the SCAQMD air quality plans and builds off the SCAMQD AQMP processes that are designed to meet health-based criteria pollutant standards in several ways (SCAG 2008). First, it complements AQMPs by providing guidance and incentives for public agencies to consider best practices that support the technology-based control measures in AQMPs. Second, the 2008 RCP emphasizes the need for local initiatives that can reduce the region's GHG emissions that contribute to climate change, an issue that is largely outside the focus of local attainment plans, which is assessed in Chapter 3. Third, the 2008 RCP emphasizes the need for better coordination of land use and transportation planning, which heavily influences the emissions inventory from the transportation sectors of the economy. This also minimizes land use conflicts, such as residential development near freeways, industrial areas, or other sources of air pollution.

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

Federal Transportation Improvement Program Consistency Amendment through Amendment 15-12 had been met (SCAG 2016). The SCAQMD 2016 AQMP applies the updated SCAG growth forecasts assumed in the 2016 RTP/SCS.

2.2.3.3 City of Torrance

The City's General Plan (2010) includes various goals and policies designed to help improve air quality within the City. In regards to reducing mobile source emissions, the City has adopted a Trip Reduction Ordinance (Municipal Code Division 9 Chapter 10) to incentivize walking, cycling, use of public transit, and carpooling to work. Energy efficiency in buildings is addressed under energy conservation and sustainable building practices topics in the General Plan Update. Trip reduction strategies are addressed in the Land Use and Circulation Elements. The Land Use Element includes policies to encourage site design that is conducive to walking. To reduce vehicle traffic and congestion within Torrance, the Circulation Element includes policies to encourage the use of alternative forms of transportation and strategies to be implemented by employers, developers, and merchants within the City. Transportation Demand Management strategies include promoting the use of carpools, vanpools, work-related transit use, bicycling, and walking as a means to improve air quality and to minimize congestion on the local and regional network.

As discussed in the General Plan, policies pertaining to improving air quality are addressed in multiple chapters of the General Plan. Objective CR.13 and associated policies are presented below (City of Torrance 2010).

OBJECTIVE CR.13: To contribute to the improvement of local and regional ambient air quality to benefit the health of all.

- **Policy CR.13.1:** Continue to participate in the efforts of the CARB and the SCAQMD to meet State and federal air quality standards.
- **Policy CR.13.2:** Work with neighboring cities to implement local and regional projects that improve mobility on freeways and railways, reduce emissions, and improve air quality.
- **Policy CR.13.3:** Support regional air quality goals through conscientious land use and transportation planning and the implementation of resource conservation measures.
- **Policy CR.13.4:** Balance the achievement of clean air with other major goals of the City.
- **Policy CR.13.5:** Support air quality and energy and resource conservation by encouraging alternative modes of transportation such as walking, bicycling, transit, and carpooling.
- **Policy CR.13.6:** Promote citizen awareness and participation in programs to reduce air pollution and traffic congestion.

- **Policy CR.13.7:** Encourage the use of alternative fuel vehicles and re-refined oil.
- **Policy CR.13.8:** Promote energy-efficient building construction and operation practices that reduce emissions and improve air quality.

Many air quality strategies result in co-benefits by reducing GHG emissions and vice versa. See Section 3.2.3.4, City of Torrance, for a discussion of the City's GHG emissions reduction policies.

2.3 Regional and Local Air Quality Conditions

2.3.1 South Coast Air Basin Attainment Designation

Pursuant to the 1990 federal Clean Air Act amendments, EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether the NAAQS have been achieved. Generally, if the recorded concentrations of a pollutant are lower than the standard, the area is classified as "attainment" for that pollutant. If an area exceeds the standard, the area is classified as "nonattainment" for that pollutant. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated as "unclassified" or "unclassifiable." The designation of "unclassifiable/attainment" means that the area meets the standard or is expected to be meet the standard despite a lack of monitoring data. Areas that achieve the standards after a nonattainment designation are re-designated as maintenance areas and must have approved Maintenance Plans to ensure continued attainment of the standards. The California Clean Air Act, like its federal counterpart, called for the designation of areas as "attainment" or "nonattainment," but based on CAAQS rather than the NAAQS. Table 3 depicts the current attainment status of the project site with respect to the NAAQS and CAAQS. The attainment classifications for the criteria pollutants are outlined in Table 3.

Table 3
South Coast Air Basin Attainment Classification

Pollutant	Designation/Classification	
	Federal Standards	*State Standards*
Ozone (O_3) – 1 hour	No federal standard	Nonattainment
Ozone (O_3) – 8 hour	Extreme nonattainment	Nonattainment
Nitrogen dioxide (NO_2)	Unclassifiable/attainment	Attainment
Carbon monoxide (CO)	Attainment/maintenance	Attainment
Sulfur dioxide (SO_2)	Unclassifiable/attainment	Attainment
Coarse particulate matter (PM_{10})	Attainment/maintenance	Nonattainment
Fine particulate matter ($PM_{2.5}$)	Serious nonattainment	Nonattainment
Lead (Pb)	Nonattainment	Attainment
Hydrogen sulfide	No federal standard	Unclassified

Table 3
South Coast Air Basin Attainment Classification

Pollutant	Designation/Classification	
	Federal Standards	*State Standards*
Sulfates	No federal standard	Attainment
Visibility-reducing particles	No federal standard	Unclassified
Vinyl chloride	No federal standard	No designation

Sources: EPA 2016c (federal); CARB 2016d (state).
Notes: **Bold text** = not in attainment; attainment = meets the standards; attainment/maintenance = achieve the standards after a nonattainment designation; nonattainment = does not meet the standards; unclassified or unclassifiable = insufficient data to classify; unclassifiable/attainment = meets the standard or is expected to be meet the standard despite a lack of monitoring data.

In summary, the SCAB is designated as a nonattainment area for federal and state O_3 standards and federal and state $PM_{2.5}$ standards. The SCAB is designated as a nonattainment area for state PM_{10} standards; however, it is designated as an attainment area for federal PM_{10} standards. The SCAB is designated as an attainment area for federal and state CO standards, federal and state NO_2 standards, and federal and state SO_2 standards. While the SCAB has been designated as nonattainment for the federal rolling 3-month average lead standard, it is designated attainment for the state lead standard (EPA 2016c; CARB 2016d).

Despite the current non-attainment status, air quality within the SCAB has generally improved since the inception of air pollutant monitoring in 1976. This improvement is mainly due to lower-polluting on-road motor vehicles, more stringent regulation of industrial sources, and the implementation of emission reduction strategies by SCAQMD. This trend toward cleaner air has occurred in spite of continued population growth. Despite this growth, air quality has improved significantly over the years, primarily due to the impacts of the region's air quality control program. PM_{10} levels have declined almost 50% since 1990, and $PM_{2.5}$ levels have also declined 50% since measurements began in 1999 (SCAQMD 2013). Similar improvements are observed with O_3, although the rate of O_3 decline has slowed in recent years.

2.3.2 Local Ambient Air Quality

CARB, air districts, and other agencies monitor ambient air quality at approximately 250 air quality monitoring stations across the state. SCAQMD monitors local ambient air quality at the project site. Air quality monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. The most recent background ambient air quality data from 2014 to 2016 are presented in Table 4. The Long Beach Webster Street monitoring station, located at 2425 Webster Street,[6] California 90810,

6 The address of 2425 Webster Street has been changed to 2425 Webster Avenue; however, the location is the same.

is the nearest air quality monitoring station to the project site, located approximately 7.5 miles east from the project site. The data collected at this station are considered representative of the air quality experienced in the project vicinity. Air quality data for O_3, NO_2, CO, SO_2, PM_{10}, and $PM_{2.5}$ from the Long Beach Webster Street monitoring station are provided in Table 4. Because $PM_{2.5}$ is not monitored at the Webster Street monitoring station, $PM_{2.5}$ measurements were taken from the Long Beach North Long Beach Boulevard monitoring station (3648 North Long Beach Boulevard, California, 90807, approximately 9.5 miles east-northeast from the project site). The number of days exceeding the ambient air quality standards is also shown in Table 4.

Table 4
Local Ambient Air Quality Data

Monitoring Station	Unit	Averaging Time	Agency/ Method	Ambient Air Quality Standard	Measured Concentration by Year			Exceedances by Year		
					2014	*2015*	*2016*	*2014*	*2015*	*2016*
Ozone (O_3)										
Long Beach Webster Street	ppm	Maximum 1-hour concentration	State	0.09	0.087	0.087	0.079	0	0	0
	ppm	Maximum 8-hour concentration	State	0.070	0.72	0.067	0.059	1	0	0
			Federal	0.070	0.72	0.066	0.059	1	0	0
Nitrogen Dioxide (NO_2)										
Long Beach Webster Street	ppm	Maximum 1-hour concentration	State	0.18	0.135	0.101	0.075	*0*	*0*	*0*
			Federal	0.100	0.1359	0.1018	0.0756	*2*	*1*	*0*
	ppm	Annual concentration	State	0.030	ND	0.020	0.018	—	—	—
			Federal	0.053	—	—	—	—	—	—
Carbon Monoxide (CO)										
Long Beach Webster Street	ppm	Maximum 1-hour concentration	State	20	—	—	—	—	—	—
			Federal	35	3.7	3.3	3.3	0	0	0
	ppm	Maximum 8-hour concentration	State	9.0	ND	—	—	0	0	—
			Federal	9	2.6	2.2	2.2	0	0	0
Sulfur Dioxide (SO_2)										
Long Beach Webster Street	ppm	Maximum 1-hour concentration	Federal	0.075	0.0147	0.0375	0.0178	0	0	0
	ppm	Maximum 24-hour concentration	Federal	0.14	0.030	0.046	0.036	0	0	0
	ppm	Annual concentration	Federal	0.030	0.0132[a]	0.0099[a]	0.092	0	0	0

Table 4
Local Ambient Air Quality Data

Monitoring Station	Unit	Averaging Time	Agency/ Method	Ambient Air Quality Standard	Measured Concentration by Year			Exceedances by Year		
					2014	*2015*	*2016*	*2014*	*2015*	*2016*
Coarse Particulate Matter (PM_{10})[b]										
Long Beach Webster Street	$\mu g/m^3$	Maximum 24-hour concentration	State	50	84.0	79.0	ND	19.3 (3)	37.6 (6)	ND (ND)
			Federal	150	84.0	80.0	75.0	0.0 (0)	0.0 (0)	0.0 (0)
	$\mu g/m^3$	Annual concentration	State	20	29.5	31.3	ND	—	—	—
Fine Particulate Matter ($PM_{2.5}$)[b]										
Long Beach North Long Beach Boulevard	$\mu g/m^3$	Maximum 24-hour concentration	Federal	35	51.5	54.6	29.3	ND (2)	3.1 (3)	0.0 (0)
	$\mu g/m^3$	Annual concentration	State	12	ND	ND	10.3	—	—	—
			Federal	12.0	ND	10.8	10.3	—	—	—

Sources: CARB 2017a; EPA 2016d.
Notes: ppm = parts per million by volume; ND = insufficient data available to determine the value; — = not available; $\mu g/m^3$ = micrograms per cubic meter.
Data taken from CARB iADAM (http://www.arb.ca.gov/adam) and EPA AirData (http://www.epa.gov/airdata/) represent the highest concentrations experienced over a given year.
Exceedances of federal and state standards are only shown for O_3 and particulate matter. Daily exceedances for particulate matter are estimated days because PM_{10} and $PM_{2.5}$ are not monitored daily. All other criteria pollutants did not exceed federal or state standards during the years shown. There is no federal standard for 1-hour ozone, annual PM_{10}, or 24-hour SO_2, nor is there a state 24-hour standard for $PM_{2.5}$.
Long Beach Webster Street Monitoring Station is located at 2425 Webster Street, Long Beach, California 90810.
Long Beach North Long Beach Boulevard Monitoring Station is located at 3648 North Long Beach Boulevard, Long Beach, California 90807.
a Mean does not satisfy minimum data completeness criteria.
b Measurements of PM_{10} and $PM_{2.5}$ are usually collected every 6 days and every 1 to 3 days, respectively. Number of days exceeding the standards is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard.

2.4 Significance Criteria and Methodology

2.4.1 Thresholds of Significance

The significance criteria used to evaluate the project impacts to air quality is based on the recommendations provided in Appendix G of the CEQA Guidelines. For the purposes of this air quality analysis, a significant impact would occur if the project would (14 CCR 15000 et seq.):

1. Conflict with or obstruct implementation of the applicable air quality plan.
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

3. 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors).
4. Expose sensitive receptors to substantial pollutant concentrations.
5. Create objectionable odors affecting a substantial number of people.

Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) indicates that, where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to determine whether the project would have a significant impact on air quality.

The SCAQMD has established Air Quality Significance Thresholds, as revised in March 2015, that set forth quantitative emission significance thresholds below which a project would not have a significant impact on ambient air quality under existing and cumulative conditions. The quantitative air quality analysis provided herein applies the SCAQMD thresholds identified in Table 5 to determine the potential for the project to result in a significant impact under CEQA.

Table 5
SCAQMD Air Quality Significance Thresholds

Criteria Pollutants Mass Daily Thresholds		
Pollutant	*Construction (Pounds per Day)*	*Operation (Pounds per Day)*
VOCs	75	55
NO_x	100	55
CO	550	550
SO_x	150	150
PM_{10}	150	150
$PM_{2.5}$	55	55
Lead[a]	3	3
TACs and Odor Thresholds		
TACs[b]	Maximum incremental cancer risk ≥ 10 in 1 million Chronic and acute hazard index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality Standards for Criteria Pollutants[c]		
NO_2 1-hour average NO_2 annual arithmetic mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.030 ppm (state) and 0.0534 ppm (federal)	

Table 5
SCAQMD Air Quality Significance Thresholds

Criteria Pollutants Mass Daily Thresholds		
Pollutant	*Construction (Pounds per Day)*	*Operation (Pounds per Day)*
CO 1-hour average CO 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
PM_{10} 24-hour average PM_{10} annual average	10.4 μg/m³ (construction)[d] 2.5 μg/m³ (operation) 1.0 μg/m³	
$PM_{2.5}$ 24-hour average	10.4 μg/m³ (construction)[d] 2.5 μg/m³ (operation)	

Source: SCAQMD 2015.
Notes: SCAQMD = South Coast Air Quality Management District; VOC = volatile organic compounds; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; TAC = toxic air contaminant; NO_2 = nitrogen dioxide; ppm = parts per million by volume; μg/m³ = micrograms per cubic meter.
GHG emissions thresholds for industrial projects, as added in the March 2015 revision to the SCAQMD Air Quality Significance Thresholds, were not include included in Table 5 as they are addressed within the GHG emissions analysis and not the air quality study.
a The phaseout of leaded gasoline started in 1976. Since gasoline no longer contains lead, the project is not anticipated to result in impacts related to lead; therefore, it is not discussed in this analysis.
b TACs include carcinogens and noncarcinogens.
c Ambient air quality standards for criteria pollutants are based on SCAQMD Rule 1303, Table A-2, unless otherwise stated.
d Ambient air quality threshold are based on SCAQMD Rule 403.

The evaluation of whether the project would conflict with or obstruct implementation of the applicable air quality plan (Impact AQ-1) is based on the SCAQMD CEQA Air Quality Handbook (SCAQMD 1993), Chapter 12, Sections 12.2 and 12.3. The first criterion assesses if the project would result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay the timely attainment of air quality standards of the interim emissions reductions specified in the AQMP, which is addressed in detail in Section 2.5.2, Threshold AQ-2. The second criterion is if the project would exceed the assumptions in the AQMP or increments based on the year of project buildout and phase, as discussed further in Section 2.5.1, Threshold AQ-1.

To evaluate the potential for the project to violate any air quality standard or contribute substantially to an existing or projected air quality violation (Threshold AQ-2), this analysis applies the SCAQMD's construction and operational criteria pollutants mass daily thresholds, as shown in Table 5. A project would result in a substantial contribution to an existing air quality violation of the NAAQS or CAAQS for O_3, which is a nonattainment pollutant, if the project's construction or operational emissions would exceed the SCAQMD VOC or NO_x thresholds shown in Table 5. These emissions-based thresholds for O_3 precursors are intended to serve as a surrogate for an "ozone significance threshold" (i.e., the potential for adverse O_3 impacts to occur). This approach is used because O_3 is not emitted directly (see the discussion of O_3 and its sources in Section 2.1.2, Pollutants and Effects), and the effects of an individual project's emissions of O_3 precursors (VOC and NO_x) on O_3 levels in ambient air cannot be determined through air quality models or other quantitative methods.

The assessment of the project's potential to expose sensitive receptors to substantial pollutant concentrations (Section 2.5.3, Threshold AQ-3) includes a localized significance threshold (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. For project sites of 5 acres or less, the SCAQMD LST Methodology (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 site is greater than 5 acres (estimated to be 5.71 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 LST significance thresholds 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 significance threshold 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 3 (Southwest Coastal Los Angeles County). The SCAQMD provides guidance for applying California Emissions Estimator Model (CalEEMod) to the LSTs. LST pollutant screening level concentration data is 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 acres 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 1 acre per day (two excavators operating during the grading phase). Because the total disturbed acreage would be 5.71 acres over approximately 87 days, the estimate of 1 acre per day of disturbance is conservative. Because the SCAQMD does not provide lookup table values for sites less than 1 acre, the LST values for 1 acre within SRA 3 were used.

The nearest sensitive-receptor land use (a residence) is located approximately 77 feet north of the project's limits of construction. As such, the LST receptor distance was assumed to be 82 feet (25 meters), which is the shortest distance provided by the SCAQMD lookup tables. The LST values from the SCAQMD lookup tables for SRA 3 (Southwest Coastal Los Angeles County) for a 1-acre project site and a receptor distance of 25 meters (82 feet) are shown in Table 6.

Table 6
Localized Significance Thresholds for Source Receptor Area 3
(Southwest Coastal Los Angeles County)

Pollutant	Threshold (Pounds per Day)
NO_2	91
CO	664
PM_{10}	5
$PM_{2.5}$	3

Source: SCAQMD 2009.
Notes: NO_2 = nitrogen dioxide; CO = carbon monoxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter.
LST thresholds were determined based on the values for 1-acre site at a distance of 25 meters (82 feet) from the nearest sensitive receptor.

The methodology for evaluating CO hotspots is detailed in Section 2.4.2.3, Carbon Monoxide Hotspots. Similarly, the construction HRA methodology and assumptions are presented in Section 2.4.2.4, Construction Health Risk Assessment. The construction HRA applies the SCAQMD risk thresholds presented in Table 5, 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 hotspot assessment and construction HRA are evaluated under the potential for the project to expose sensitive receptors to substantial pollutant concentrations (Section 2.5.4, Threshold AQ-4), along with the LST analysis.

The potential for the project to result in an odor impact (Section 2.5.5, Threshold AQ-5) is based on the project's land use type and anticipated construction activity, and the potential for the project to create an odor nuisance pursuant to SCAQMD Rule 402.

2.4.2 Approach and Methodology

2.4.2.1 Construction Emissions

Emissions from the construction phase of the project were estimated using CalEEMod Version 2016.3.2. Construction scenario assumptions, including phasing, equipment mix, and vehicle trips, were based on information provided by the project applicant and CalEEMod default values when project specifics were not known.

For purposes of estimating project emissions, and based on information provided by the project applicant, a base year of 2017 and a construction duration of 29 months was assumed in the analysis. The analysis contained herein is based on the following assumptions (duration of phases is approximate):

- Grading: 4 months
- Building Construction – Parking Garage: 7 months
- Paving: 2 months
- Building Construction – Residential (above parking): 18 months
- Application of Architectural Coatings: 3 months

The 4-month grading phase will include site grading, remediation, temporary shoring, and installation of utilities. The temporary shoring would be approximately 125 feet long.

Both the parking garage and the residential development would be painted during the 3-month architectural coating phase. The residential building construction phase and the architectural coating phase end during the same month because the residential building construction phase duration includes finalization of the project construction and exterior improvements, as well as demobilization.

Construction-worker estimates and vendor truck trips by construction phase were based on CalEEMod default values. Haul truck trips during the grading phase were based on project applicant-provided earthwork quantities. Grading is currently estimated to involve 120,915 cubic yards (CY) of cut and 1,646 CY of fill, resulting in 119,270 CY of soil for export. Assuming a haul truck capacity of 16 CY per truck, earth-moving activities would result in approximately 7,455 round trips (14,910 one-way truck trips) during the grading phase. CalEEMod default trip length values were used for the distances for all construction-related trips. Fugitive dust generated during truck loading is included in CalEEMod as an on-site source of fugitive dust emissions and is calculated based on estimated throughput of loaded and unloaded material (i.e., 119,270 CY of soil export).

Notably, the applicant would work with the Department of Toxic Substances Control, per the City's request, and would comply with the provisions of the pending land use covenant, which does not envision environmental remediation of on-site soils. As such, the additional 10% excavation buffer (which would equate up to 11,927 CY) specified in the Geocon letter regarding "Suggested Contingency Factor for Estimation of Soil Excavation during Grading" (Geocon West Inc. 2018b) would be balanced on site and would not be exported off site. In order to estimate fugitive dust from excavation and movement of the additional 11,927 CY of soil, fugitive dust (PM_{10} and $PM_{2.5}$) was calculated using a spreadsheet model based on the CalEEMod equations for material handling.

The project would involve a clean cap of soil below the residential structures, which will consist of native soil from onsite. As such, fill would be composed of onsite soil and no import of offsite fill is anticipated to be required to construct the project.

The construction equipment mix and vehicle trips used for estimating the project-generated construction emissions, which were provided by the applicant, are shown in Table 7. For the analysis, it was generally assumed that heavy construction equipment would be operating at the site 5 days per week (22 days per month) during project construction.

Table 7
Construction Scenario Assumptions

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	*Average Daily Vendor Truck Trips*	*Total Haul Truck Trips*	*Equipment Type*	*Quantity*	*Usage Hours*
Grading	24	0	14,910	Excavators	2	8
				Rubber-tired loaders	1	8
Building construction – parking garage	100	40	0	Tractors/loaders/backhoes	2	8
Paving	8	2	0	Pavers	1	8
				Paving equipment	1	8
				Rollers	1	8
Building construction – residential (above garage)	182	30	0	Cranes	1	6
				Forklifts	2	8
				Welders	1	4
Architectural coating	56	2	0	—	—	—

Notes: See Appendix A for details.

As discussed in Section 1.4, Dust Control Strategies, the project would implement dust control strategies as a project design feature. To reflect implementation of proposed dust control strategies, the following was assumed in CalEEMod:

- Water exposed area three times per day (61% reduction in PM_{10} and $PM_{2.5}$).
- As a surrogate for watering unpaved road three times per day, the "soil stabilizer for unpaved" option was used assuming a 61% reduction in PM_{10} and $PM_{2.5}$.
- Limit vehicle travel on unpaved roads to 15 mph.

2.4.2.2 Operational Emissions

Emissions from the operational phase of the project were estimated using CalEEMod Version 2016.3.2. Operational year 2019 was assumed consistent with the traffic impact study (TIS) prepared for the project.

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 in the building energy use module of CalEEMod, as described in the following text. The project would not include woodstoves or fireplaces (wood or natural gas). As such, 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 2017). 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. Consistent with CalEEMod defaults, it is assumed that the residential surface area for painting equals 2.7 times the floor square footage, with 75% assumed for interior coating and 25% assumed for exterior surface coating. For nonresidential land uses (e.g., community and fitness rooms), it is assumed that the surface area for painting equals 2.0 times the floor square footage, with 75% assumed for interior coating and 25% assumed for exterior surface coating. For the parking garage, the architectural coating area is assumed to be 6% of the total square footage, consistent with the supporting CalEEMod studies provided as an appendix to the CalEEMod User's Guide (CAPCOA 2017).

Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers. The emissions associated from landscape equipment use are estimated based on CalEEMod default values for emission factors (grams per residential dwelling unit per day and 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 (CAPCOA 2017). By design, the project would not include turf, and the proposed landscaped area would be minimal and any landscape equipment used is anticipated to be powered by electricity, when needed. Nonetheless, emissions associated with potential landscape maintenance equipment were included and no emission reduction features related to electric landscape equipment was assumed to conservatively capture potential project operational emission sources.

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.

The energy use from residential land uses is calculated in CalEEMod based on the Residential Appliance Saturation Study. For nonresidential buildings, CalEEMod energy intensity values (natural gas usage per square foot per year) assumptions were based on the California Commercial End-Use Survey database. CalEEMod default values for energy consumption were applied for the project analysis and were adjusted to assume regulatory compliance with the 2016 CALGreen Tier 1 standards. Per the 2016 CALGreen Tier 1 standards (24 CCR, Part 11), which would be required by the City, the project would be required to demonstrate that buildings exceed Title 24, Part 6, of the California Code of Regulations energy efficiency standards by 15%.

Mobile Sources

Mobile sources for the project would primarily be motor vehicles (automobiles and light-duty trucks) traveling to and from the project site. Motor vehicles may be fueled with gasoline, diesel, or alternative fuels. Based on the TIS prepared for the project by KHR Associates, the proposed residential development is anticipated to generate 6.65 trips per dwelling unit (KHR Associates 2018a), which was assumed for the weekday trip rate.[7] Accordingly, the 248 dwelling units would generate approximately 1,649 trips per day during the week. Because the default CalEEMod trip weekday trip rate for mid-rise apartments is the same as the assumed project trip rate, the default CalEEMod weekend trip rates were used and no adjustments were necessary. CalEEMod default data, including temperature, trip characteristics, variable start information, emissions factors, and trip distances, were conservatively used for the model inputs to estimate daily emissions from proposed vehicular sources. Project-related traffic was assumed to include a mixture of vehicles in accordance with the model outputs for traffic. Emission factors representing the vehicle mix and emissions for 2019 were used to estimate emissions associated with full buildout of the project.

The California Air Pollution Control Officers Association (CAPCOA) has developed methodologies for quantifying the GHG emission reductions associated with numerous mitigation measures (CAPCOA 2010). Several of the measures would also reduce air pollutant emissions, which are related to land use and transportation planning that would reduce vehicle trips and/or trip lengths, enhance walking and bicycles as alternative modes of transportation, enhance availability of transit, and incorporate other approaches. In regards to mobile source emission reduction features relating to land use, it was assumed that the project would involve an increase in typical density and an improvement to destination accessibility to job centers. The project's density of 10 dwelling units per acre is greater than the assumed blended average density of residential development of 7.6 dwelling units per acre (CAPCOA 2010), which results in a reduction in vehicle miles traveled (VMT). The project's density within the 5.71-acre Lot 1, which is the only lot in which project development would occur, is approximately 43.4

7 The TIS used the trip rates provided in the *Institute of Transportation Engineers Trip Generation Manual*, 9th Edition (ITE 2012), for the mid-rise apartment land use category.

dwelling units per acre. Accordingly, assuming a project density of 10 dwelling units per acre instead of 43.4 dwelling units per acre is conservative.

Job opportunities are located within 1 to 5 miles of the project site, and it was conservatively assumed in CalEEMod that job centers are located within 5 miles of the project site, which is greater than the assumed average work trip length of 12 miles (CAPCOA 2010). The location of job opportunities near the project site would result in a reduction in home-to-work trip lengths for residents that work nearby. The reduction in overall commute VMT would result in an associated reduction in mobile source emissions. The City is home to nearly 400 headquarter businesses, which offer various employment opportunities to Torrance residents (City of Torrance Office of Economic Development 2017a). The City's Office of Economic Development identified the top 12 Torrance employers, 9 of which are within 5 miles or less of the project site (approximate trip distance from the project site provided in parenthesis): American Honda Motor Co. Inc. (5 miles), Robinson Helicopter Company (1 mile), Hi-Shear Corporation (2 miles), Alcoa Fastening Systems (2 miles), Exxon Mobil Oil Corporation/Torrance Refining Company (5 miles), Pelican Productions Inc. (2 miles), Macy's Department Store (2.5 miles), L-3 Communications Electron (2 miles), and Saatchi & Saatchi (2 miles) (City of Torrance Office of Economic Development 2017b). Another of the top 12 employers, Honeywell Aerospace, is located less than 7 miles from the project site (Torrance Office of Economic Development 2017b). In addition, there are multiple retail centers located near the project, including the Del Amo Fashion Center, located within 2.5 miles of the project site, and a strip mall located 0.5 miles north of the project site.

In regard to neighborhood enhancements, it was assumed that the project would improve the pedestrian network on the project site and connecting off site, which results in minor reductions to motor vehicle emissions. Pedestrian network improvements include providing access and links to pedestrian facilities contiguous with the project site and minimizing barriers to pedestrian access and interconnectivity, which would encourage pedestrian travel. The City's Hawthorne Boulevard Corridor Specific Plan, which covers the area north of the project site along Hawthorne Boulevard, promotes walkable commercial corridor of neighborhood-serving retail uses, office, and restaurants (City of Torrance 1996). Project residents would have access to the walkable Hawthorne Boulevard corridor and adjacent retail and commercial uses. Pedestrian network improvements on site and connections to off-site facilities would result in a minor VMT reduction and an associated reduction in mobile source emissions by shifting travel from motor vehicles to pedestrian or bicycle travel (CAPCOA 2010).

The project design would include pedestrian/bicycle safety and traffic calming measures in excess of jurisdiction requirements. Internal roadways would be designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips with traffic calming features and thereby would reduce

VMT.[8] All of the on-site project intersections would have marked crosswalks and approximately 50% of intersections would have raised medians (Brockman, pers. comm. 2017). Approximately 25% of internal streets would provide on-street parking and approximately 10% would have raised medians with landscaping (Brockman, pers. comm. 2017). In addition, a raised median would be provided at 50% of the project access points and an off-site deceleration lane for slowing entrance traffic to the site from Hawthorne Boulevard is included in the project design. Based on these considerations, it was conservatively assumed in CalEEMod that 25% of intersections and 25% of streets would include traffic calming measures.

2.4.2.3 Carbon Monoxide Hotspots

Mobile source impacts occur on two scales of motion. Regionally, project-related travel would add to regional trip generation and increase the VMT within the local airshed and the SCAB. Locally, project generated traffic would be added to the City's roadway system near the project site. If such traffic occurs during periods of poor atmospheric ventilation, is composed of a large number of vehicles cold-started and operating at pollution-inefficient speeds, and is operating on roadways already crowded with non-project traffic, there is a potential for the formation of microscale CO hotspots in the area immediately around points of congested traffic. Because of continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots in the SCAB is steadily decreasing.

Projects contributing to adverse traffic impacts may result in the formation of CO hotspots. To verify that the project would not cause or contribute to a violation of the CO standard, a screening evaluation of the potential for CO hotspots was conducted. The potential for CO hotspots is evaluated based on the results of the TIS (KHR Associates 2018a) and the California Department of Transportation (Caltrans) Institute of Transportation Studies *Transportation Project-Level Carbon Monoxide Protocol* (CO Protocol; 1997) was followed. For projects located within an area designated as attainment or unclassified under the CAAQS or NAAQS, the CO Protocol identifies screening criteria for consideration. The first screening criteria focuses on projects that are likely to worsen air quality, which would occur if (1) the project significantly increases the percentage of vehicles operating in cold start mode (greater than 2%), (2) the project significantly increases traffic volumes (greater than 5%), and/or (3) the project worsens traffic flow. In addition to consideration of whether the project would worsen air quality, CO hotspots are typically evaluated when (1) the level of service (LOS) of an intersection or roadway decreases to LOS E or worse; (2)

8 Per the CAPCOA *Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures* report (CAPCOA 2010), types of traffic calming features include marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others.

signalization and/or channelization is added to an intersection; and (3) sensitive receptors such as residences, schools, and hospitals are located in the vicinity of the affected intersection or roadway segment. Appendix B presents the CO hotspot assessment assumptions.

2.4.2.4 Construction Health Risk Assessment

An HRA was performed to evaluate potential health risk 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 C.

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 1,000 feet to estimate emissions from truck pass-by at proximate receptors.

The air dispersion modeling methodology was based on generally accepted modeling practices of SCAQMD (SCAQMD 2018a). Air dispersion modeling was performed using EPA's American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) Version 16216r modeling system (computer software) with the Lakes Environmental Software implementation/user interface, AERMOD View Version 9.5.0. The HRA followed the Office of Environmental Health Hazard Assessment (OEHHA) 2015 guidelines (OEHHA 2015) and SCAQMD guidance to calculate the health risk impacts at all proximate receptors including off-site residential receptors, the nearest school, and worker 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. Principal parameters of this modeling are presented in Table 8.

Table 8
AERMOD Principal Parameters

Parameter	Details
Meteorological data	AERMOD-specific meteorological data for the Hawthorne Airport air monitoring station (KHHR) was used for the dispersion modeling. A 5-year meteorological data set from 2012 through 2016 was obtained from the SCAQMD in a preprocessed format suitable for use in AERMOD.
Urban versus rural option	Urban dispersion option was selected due to the developed nature of the project area and per SCAQMD guidelines
Terrain characteristics	The elevation of the site is 191 feet (58.2 meters) above mean sea level.
Elevation data	Digital elevation data were imported into AERMOD and elevations were assigned to receptors and emission sources, as necessary. Digital elevation data were obtained through the AERMOD View

Table 8
AERMOD Principal Parameters

Parameter	Details
	in the United States Geological Survey's National Elevation Dataset format with a resolution of 1/3 degree (approximately 10 meters), consistent with the SCAQMD guidance (SCAQMD 2018a).
Source release characterizations	The modeled source area was approximately 6 acres. An initial lateral dimension of 1 meter and a release height of 5 meters was assumed for off-road equipment and diesel trucks.

Note: AERMOD = American Meteorological Society/Environmental Protection Agency Regulatory Model; SCAQMD = South Coast Air Quality Management District.
See Appendix C.

Regarding receptors, the construction scenario used a 2-kilometer by 2-kilometer (1.2-mile by 1.2-mile) Cartesian receptor grid with 100-meter (330-foot) spacing to establish the impact area and evaluate locations of maximum health risk impact. The construction scenario also used discrete receptors positioned at specific locations to evaluate the maximally exposed sensitive receptor. Discrete receptors included residences located near the project site property boundary, commercial/retail land uses to the east of the project site, and the nearest school, Walteria Elementary School, which is located approximately 1,180 feet northeast of the project site.

The health risk calculations were performed using the Hotspots Analysis and Reporting Program Version 2 (HARP 2) Air Dispersion and Risk Tool (ADMRT, Version 17320). AERMOD was run with all sources emitting unit emissions (1 gram per second) to obtain the necessary input values for HARP 2. The ground-level concentration plot files were then used to estimate the long-term cancer health risk to an individual, and the non-cancer 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 one 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 for residential receptor locations and 25 years for off-site worker receptor locations. For the construction HRA, the TAC exposure period was assumed to be 3 years for all receptor locations (i.e., the assumed duration of project construction). While construction of the project would last approximately 2.5 years, average annual construction emissions estimated over 2.5 years were conservatively assumed to occur continuously over 3 years based on the HARP 2 input options. The exposure pathway for DPM is inhalation-only.

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. 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 less of than one (1.0) means that adverse health effects are not expected.

The construction HRA calculated Residential Maximum Individual Cancer Risk, Worker Maximum Individual Cancer Risk, School Maximum Individual Cancer Risk, Residential Chronic Hazard Index, Worker Chronic Hazard Index, and School Chronic Hazard Index.

2.5 Impact Analysis

2.5.1 Threshold AQ-1

Would the project conflict with or obstruct implementation of the applicable air quality plan?

As previously discussed, the project site is located within the SCAB under the jurisdiction of the SCAQMD, which is the local agency responsible for administration and enforcement of air quality regulations for the area. The SCAQMD has established criteria for determining consistency with the AQMP, currently the 2016 AQMP, in Chapter 12, Sections 12.2 and 12.3, in the SCAQMD CEQA Air Quality Handbook (SCAQMD 1993). The criteria are as follows (SCAQMD 1993):

- **Consistency Criterion No. 1:** The proposed project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay the timely attainment of air quality standards of the interim emissions reductions specified in the AQMP.
- **Consistency Criterion No. 2:** The proposed project will not exceed the assumptions in the AQMP or increments based on the year of project buildout and phase.

Consistency Criterion No. 1

Section 2.5.2, Threshold AQ-2, evaluates the project's potential impacts in regards to CEQA Guidelines Appendix G Threshold 2 (the project's potential to violate any air quality standard or contribute substantially to an existing or projected air quality violation impact analysis). As discussed in Section 2.5.2, the project would not result in a significant and unavoidable impact associated with the violation of an air quality standard. Because the project would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, the project would not conflict with Consistency Criterion No. 1 of the SCAQMD CEQA Air Quality Handbook.

Consistency Criterion No. 2

While striving to achieve the NAAQS for O_3 and $PM_{2.5}$ and the CAAQS for O_3, PM_{10}, and $PM_{2.5}$ through a variety of air quality control measures, the 2016 AQMP also accommodates planned growth in the SCAB. Projects are considered consistent with, and would not conflict with or obstruct implementation of, the AQMP if the growth in socioeconomic factors (e.g., population, employment) is consistent with the underlying regional plans used to develop the AQMP (per Consistency Criterion No. 2 of the SCAQMD CEQA Air Quality Handbook).

The SCAQMD primarily uses demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment by industry) developed by the SCAG for its RTP/SCS (SCAG 2016), which is based on general plans for cities and counties in the SCAB, for the development of the AQMP emissions inventory (SCAQMD 2017).[9] The SCAG 2016 RTP/SCS, and associated Regional Growth Forecast, are generally consistent with the local plans; therefore, the 2016 AQMP is generally consistent with local government plans. As discussed in Section 1.2, Regional and Local Setting, the General Plan (City of Torrance 2010) land use designation for the project development footprint is low density residential (R-LO). The project is within an area zoned as light agricultural (A-1) within the City of Torrance Property Zoning Map (City of Torrance 2015). The project is requesting a General Plan Amendment to low-medium density residential (R-LM). The project would not be consistent with the current zoning of the site; however, the project would preserve 18.97 acres of the 24.68-acre property as natural open space, which would not generate an increase in residential or employment population.

Regarding population projections, since the site is currently designated low density residential (R-LO), it could have a population of 582 people based on a maximum density of 9 units per acre and the estimated average household size of 2.62 persons in the City of Torrance (City of Torrance 2017a). At full occupancy, the project is estimated to house 722 residents. This would result in an increased population of 140 people for the project site. However, the U.S. Census estimates a population of 146,758 for Torrance as of July 1, 2017, and housing units of 58,585 through 2016. These estimates fall short of the City's Housing Element Update (adopted October 2013 and good

[9] Information necessary to produce the emission inventory for the SCAB is obtained from the SCAQMD and other governmental agencies, including CARB, Caltrans, and SCAG. Each of these agencies is responsible for collecting data (e.g., industry growth factors, socio-economic projections, travel activity levels, emission factors, emission speciation profile, and emissions) and developing methodologies (e.g., model and demographic forecast improvements) required to generate a comprehensive emissions inventory. SCAG incorporates these data into their Travel Demand Model for estimating/projecting VMT and driving speeds. SCAG's socio-economic and transportation activities projections in their 2016 RTP/SCS are integrated in the 2016 AQMP (SCAQMD 2017).

through December 2021), which projected a population of 155,464 by 2020 and equates to an increase in population of 8,706 persons over the 2017 Census. Since the City has not experienced nor entitled more than 500 housing units since the Housing Element Update, the City's population projections would accommodate the additional 140 persons at the project site.

Based on these considerations, vehicle trip generation and planned development for the site are concluded to have been anticipated in the SCAG growth projections because the increased population at the project site would be accommodated by the City's predicted population projections in the Housing Element Update. Because the addition of project-generated residents to the City's estimated population would not exceed the SCAG 2016 RTP/SCS forecasted population, implementation of the project would not result in a conflict with, or obstruct implementation of, the applicable air quality plan (i.e., SCAQMD 2016 AQMP). Accordingly, the project would meet Consistency Criterion No. 2 of the SCAQMD CEQA Air Quality Handbook.

Therefore, implementation of the project would not result in a conflict with, or obstruct implementation of, the applicable air quality plan (i.e., the 2016 AQMP). Accordingly, the project would meet Consistency Criterion No. 2 of the SCAQMD CEQA Air Quality Handbook.

Summary

As described previously, the project would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, and would not conflict with Consistency Criterion No. 1. Implementation of the project would be not exceed the demographic growth forecasts in the SCAG 2016 RTP/SCS; therefore, the project would also be consistent with the SCAQMD 2016 AQMP, which based future emission estimates on the SCAG 2016 RTP/SCS. Thus, the project would not conflict with Consistency Criterion No. 2. Based on these considerations, impacts related to the project's potential to conflict with or obstruct implementation of the applicable air quality plan would be less than significant.

2.5.2 Threshold AQ-2

Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Construction Emissions

Construction of the project would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment, soil disturbance, and VOC off-gassing) and off-site sources (i.e., on-road haul trucks, vendor trucks, and worker vehicle trips). 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. Therefore, such emission levels can only be approximately estimated with a corresponding uncertainty in precise ambient air quality impacts.

As discussed in Section 2.4.2.1, Construction Emissions, criteria air pollutant emissions associated with temporary construction activity were quantified using CalEEMod. Construction emissions were calculated for the estimated worst-case day over the construction period associated with each phase and reported as the maximum daily emissions estimated during each year of construction. Construction schedule assumptions, including phase type, duration, and sequencing, were based on information provided by the project applicant and is intended to represent a reasonable scenario based on the best information available. Default values provided in CalEEMod were used where detailed project information was not available.

Implementation of the project would generate air pollutant emissions from entrained dust, off-road equipment, vehicle emissions, architectural coatings, and asphalt pavement application. 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. The project would implement various dust control strategies and would be required to comply with SCAQMD Rule 403 to control dust emissions generated during the grading activities. Proposed construction practices that would be employed to reduce fugitive dust emissions include watering of the active sites and unpaved roads three times per day depending on weather conditions and restricting vehicle speed on unpaved roads to 15 mph. Internal combustion engines used by construction equipment, vendor trucks (i.e., delivery trucks), and worker vehicles would result in emissions of VOCs, NO_x, CO, PM_{10}, and $PM_{2.5}$. The application of architectural coatings, such as exterior application/interior paint and other finishes, and application of asphalt pavement would also produce VOC emissions; however, the contractor is required to procure architectural coatings from a supplier in compliance with the requirements of SCAQMD's Rule 1113 (Architectural Coatings).

Table 9 presents the estimated maximum daily construction emissions generated during construction of the project. The values shown are the maximum summer or winter daily emissions results from CalEEMod. Details of the emission calculations are provided in Appendix A.

Table 9
Estimated Maximum Daily Construction Criteria Air Pollutant Emissions

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
Year 1	3.60	67.75	27.49	0.16	22.52	3.67
Year 1 10% Additional Soil Excavation[a]	—	—	—	—	0.02	0.00

Table 9
Estimated Maximum Daily Construction Criteria Air Pollutant Emissions

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
Year 2	2.03	12.39	14.71	0.04	13.56	2.14
Year 3	30.43	11.70	16.14	0.05	17.13	2.55
Maximum daily emissions	30.43	67.75	27.49	0.16	22.54	3.67
SCAQMD threshold	*75*	*100*	*550*	*150*	*150*	*55*
Threshold exceeded?	No	No	No	No	No	No

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District.
See Appendix A for complete results.
The values shown are the maximum summer or winter daily emissions results from CalEEMod for the three years of construction. These emissions reflect CalEEMod mitigated output, which accounts for compliance with SCAQMD Rule 1113 (Architectural Coatings) and implementation of the project's fugitive dust control strategies, including watering of the project site and unpaved roads three times per day, and restricting vehicle speed on unpaved roads to 15 mph.
[a] In addition, in order to estimate fugitive dust from excavation and movement of the additional 10% soil excavation buffer (i.e., 11,927 cubic yards), fugitive dust (PM_{10} and $PM_{2.5}$) was calculated using a spreadsheet model based on the CalEEMod equations for material handling. The potential 10% additional soil excavation would occur during the grading phase in year 1.

Maximum daily emissions of NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions would occur during the grading phase in the first year of construction as a result of off-road equipment operation and on-road vendor trucks and haul trucks. The overlap of the building construction phase and the architectural coatings phases in the final year of construction would produce the maximum daily VOC emissions. As shown in Table 9, daily construction emissions would not exceed the SCAQMD significance thresholds for VOC, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$ during construction in all construction years. Construction-generated emissions would be temporary and would not represent a long-term source of criteria air pollutant emissions. As such, impacts would be less than significant.

Operational Emissions

The project involves development of 248 multifamily residential units, support facilities, and 484 parking spaces. Operation of the project would generate VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions from mobile sources, including vehicle trips from future residents; area sources, including the use of consumer products, architectural coatings for repainting, and landscape maintenance equipment; and energy sources, including combustion of fuels used for space and water heating and cooking appliances. As discussed in Section 2.4.2.2, Operational Emissions, pollutant emissions associated with long-term operations were quantified using CalEEMod. Project-generated mobile source emissions were estimated in CalEEMod based on project-specific trip rates. CalEEMod default values were used to estimate emissions from the project area and energy sources.

Table 10 presents the maximum daily area, energy, and mobile source emissions associated with operation of the project. The values shown are the maximum summer or winter daily emissions results from CalEEMod. Details of the emission calculations are provided in Appendix A.

Table 10
Estimated Maximum Daily Operational Criteria Air Pollutant Emissions

Emission Source	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per Day					
Area	6.86	0.24	20.61	0.00	0.11	0.11
Energy	0.08	0.70	0.31	0.00	0.06	0.06
Mobile	3.53	16.37	45.66	0.14	10.40	2.89
Total	10.47	17.31	66.59	0.14	10.57	3.06
SCAQMD threshold	*55*	*55*	*550*	*150*	*150*	*55*
Threshold exceeded?	No	No	No	No	No	No

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District.
See Appendix A for complete results.
Totals may not sum due to rounding.
The values shown are the maximum summer or winter daily emissions results from CalEEMod. These emissions reflect CalEEMod "mitigated" output and operational year 2019.

As shown in Table 10, the combined daily area, energy, and mobile source emissions would not exceed the SCAQMD operational thresholds for VOC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$. Impacts associated with project-generated operational criteria air pollutant emissions would be less than significant.

2.5.3 Threshold AQ-3

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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development, and the SCAQMD develops and implements plans for future attainment of ambient air quality standards. Based on these considerations, project-level thresholds of significance for criteria pollutants are relevant in the determination of whether a project's individual emissions would have a cumulatively significant impact on air quality.

In considering cumulative impacts from the project, the analysis must specifically evaluate a project's contribution to the cumulative increase in pollutants for which the SCAB is designated as nonattainment for the CAAQS and NAAQS. If a project's emissions would exceed the SCAQMD significance thresholds, it would be considered to have a cumulatively considerable contribution to nonattainment status in the SCAB. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant (SCAQMD 2003).

As discussed in Section 2.3.1, South Coast Air Basin Attainment Designation, the SCAB 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 SCAB including motor vehicles, off-road equipment, and commercial and industrial facilities. Construction and operation of the project would generate VOC and NO_x emissions (which are precursors to O_3) and emissions of PM_{10} and $PM_{2.5}$. However, as indicated in Tables 9 and 10, project-generated construction and operational emissions, respectively, would not exceed the SCAQMD emission-based significance thresholds for VOC, NO_x, PM_{10}, or $PM_{2.5}$. As discussed in the analysis of the project's potential to conflict with or obstruct implementation of the applicable air quality plan (see Section 2.5.1, Threshold AQ-1), the project would not conflict with the SCAQMD 2016 AQMP.

Cumulative localized impacts would potentially occur if a construction project were to occur concurrently with another off-site project. The following cumulative projects, as presented in the TIS prepared for the project (KHR Associates 2018a), were considered:

1. 3210 Sepulveda Boulevard, Torrance: 130-bed assisted living facility
2. Del Amo Senior Village, Torrance: 360-dwelling-unit independent living/assisted living/hotel
3. 21515 Hawthorne Boulevard, Torrance: commercial, 45,000-square-foot health club and 12,000-square-foot gym/restaurant
4. 23104 Hawthorne Boulevard, Torrance: 10,023-square-foot daycare for children
5. 23550 Hawthorne Boulevard, Torrance: 1,500-square-foot restaurant and 2,000-square-foot bank
6. 24000 Garnier Street, Torrance: 36,866-square-foot medical office
7. 2640 Lomita Boulevard, Torrance: commercial, 161,500-square-foot Costco with car wash and gas, which will replace previous 148,000-square-foot Costco and 75,000-square-foot medical office
8. 24444 Hawthorne Boulevard, Torrance: 2,700-square-foot office and 8-dwelling-unit residential
9. 5601 Crestridge Road, Rancho Palos Verdes (Crestridge Senior Condominium Project): 60 condominiums

10. 927 Deep Valley Drive, Rolling Hills Estates: 75 condominiums and 2,000 square feet of commercial, which will replace medical, office, and retail use
11. Peninsula Center, Rolling Hills Estates: 16,000 square feet of commercial
12. 627 Deep Valley Drive, Rolling Hills Estates: 58 condominiums and 5,810 square feet of commercial
13. 250th and Narbonne, Lomita: 20 condominiums, 2,035 square feet of commercial, and 4,281 square feet of industrial
14. 24516 Narbonne Avenue, Lomita: 22 townhomes and 700 square feet of retail
15. 25114 Narbonne Avenue, Lomita: 11 townhomes and 3,500 square feet of retail
16. 1730–1734 Pacific Coast Highway, Lomita: 850 square feet of commercial and 180 square feet of retail
17. Mixed-Use Development, Torrance: 13 dwelling units and 4,500-square-foot commercial office space

Notably, the construction schedules for the cumulative projects listed above are currently unknown; therefore, potential construction impacts associated with two or more simultaneous projects would be considered speculative.[10] However, for disclosure, localized emissions of the nearest project (#17 in the list above, the mixed-use development at 24601 Hawthorne Boulevard) were considered in conjunction with the proposed project and the SCAQMD LSTs to gauge whether there is a possibility of potential localized impacts if construction of the projects were to overlap. The localized emissions associated with construction of the proposed project are discussed in detail in Section 2.5.3, Threshold AQ-3, and the localized emissions of the nearest off-site project are detailed in the *Air Quality and Greenhouse Gas Emission Technical Memorandum for the 24601 Hawthorne Boulevard Mixed Use Development Project* (LSA 2017). In summary, the proposed project and the nearest off-site project would individually result in localized emissions substantially below the SCAQMD LSTs, and if the maxima emissions would occur concurrently, would not result in potentially significant localized emissions. Additionally, 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 construction sites in the SCAQMD.

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[10] The CEQA Guidelines state that if a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact (14 CCR 15145). This discussion is nonetheless provided in an effort to show good-faith analysis and comply with CEQA's information disclosure requirements.

Based on the previous considerations, the project would not result in a cumulatively considerable increase in emissions of nonattainment pollutants. Impacts would be less than significant.

2.5.4 Threshold AQ-4

Would the project expose sensitive receptors to substantial pollutant concentrations?

Localized Significance Thresholds Analysis

As discussed in Section 2.1.3, Sensitive Receptors, sensitive receptors are those individuals more susceptible to the effects of air pollution than the population at large. People most likely to be affected by air pollution include children, the elderly, and people with cardiovascular and chronic respiratory diseases. According to the SCAQMD, sensitive receptors include residences, schools, playgrounds, childcare centers, long-term healthcare facilities, rehabilitation centers, convalescent centers, and retirement homes (SCAQMD 1993). Residential land uses are located to the north, east, and west of the project. The closest off-site sensitive receptors to the project site include residences located approximately 77 feet north of the project's limits of construction.

An LST analysis has been prepared to determine potential impacts to nearby sensitive receptors during construction of the project. As indicated in the discussion of the thresholds of significance (Section 2.4, Significance Criteria and Methodology), SCAQMD also recommends the evaluation of localized NO_2, CO, PM_{10}, and $PM_{2.5}$ impacts as a result of construction activities to sensitive receptors in the immediate vicinity of the project site. The impacts were analyzed using methods consistent with those in SCAQMD's Final LST Methodology (2009). According to the Final LST Methodology, "off-site mobile emissions from the project should not be included in the emissions compared to the LSTs" (SCAQMD 2009). Hauling of soils and construction materials associated with the project construction are not expected to cause substantial air quality impacts to sensitive receptors along off-site roadways. Emissions from the trucks would be relatively brief in nature and would cease once the trucks pass through the main streets.

Construction activities associated with the project would result in temporary sources of on-site fugitive dust and construction equipment emissions. Off-site emissions from vendor trucks, haul trucks, and worker vehicle trips are not included in the LST analysis. The maximum allowable daily emissions that would satisfy the SCAQMD localized significance criteria for SRA 3 are presented in Table 11 and compared to the maximum daily on-site construction emissions generated during the project.

Table 11
Localized Significance Thresholds Analysis for Project Construction

Maximum On-Site Emissions	NO_2	CO	PM_{10}	$PM_{2.5}$
	Pounds per Day			
Construction emissions	14.02	12.07	0.85	0.78
SCAQMD LST	*91*	*664*	*5*	*3*
LST exceeded?	No	No	No	No

Source: SCAQMD 2009.
Notes:
NO_2 = nitrogen dioxide; CO = carbon monoxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; SCAQMD = South Coast Air Quality Management District; LST = localized significance threshold.
See Appendix A for complete results.
Localized significance thresholds are shown for 1-acre project sites corresponding to a distance to a sensitive receptor of 25 meters.
These estimates implementation of the project's fugitive dust control strategies, including watering of the project site and unpaved roads three times per day, and restricting vehicle speed on unpaved roads to 15 mph.
Greatest on-site NO_2, CO, PM_{10}, and $PM_{2.5}$ emissions are associated with the overlap between the parking garage building construction phase and paving phase in the first year of construction.

As shown in Table 11, construction activities would not generate emissions in excess of site-specific LSTs; therefore, site-specific construction impacts during construction of the project would be less than significant. In addition, diesel equipment would also be subject to the CARB air toxic control measures for in-use off-road diesel fleets, which would minimize DPM emissions.

Dust Exposure

As discussed in Section 1.4, Dust Control Strategies, a geotechnical letter was prepared to evaluate the potential for diatomaceous soils to be exposed during grading of the project site (Geocon West Inc. 2018a). Based on a site-specific investigation performed by Geocon West, diatomaceous soils are primarily confined to Lot 2, with several minimal areas in Lot 1 where it abuts Lot 2 (Geocon West Inc. 2018a). In summary, the only localized area on Lot 1 (southwest corner of the proposed parking structure) where 3 to 6 feet of slough would be disturbed (excavated) as part of the grading operations would be located a substantial distance (about 512 feet) from the nearest off-site receptor at 4464 Via Pinzon. The nearest receptor is also upwind of the project site, which means that the prevailing winds typically would blow potential emissions away from the residence and back toward the project site. Overall, based on the minimal potential disturbance of slough material described in the geotechnical report, as well as the distance to off-site receptors, the prevailing wind direction, and the extensive fugitive dust controls to be implemented during project construction, project construction activities would not result in the exposure of sensitive receptors to substantial concentrations of diatomaceous soils or amorphous silica.

The project would include various dust control strategies to minimize fugitive dust during earthmoving activities. The proposed dust control strategies are presented in Section 1.4. In addition, the project would be required to comply with SCAQMD Rule 403 (Fugitive Dust), which requires fugitive dust sources to implement best available control measures for all sources and prohibits all forms of visible particulate matter from crossing any property line. SCAQMD Rule 403 is intended to reduce PM_{10} emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust.

As explained under the LST analysis, on-site PM_{10} and $PM_{2.5}$ emissions, including fugitive dust and exhaust particulate matter, would not exceed the SCAQMD's LSTs for SRA 3. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest residence or sensitive receptors, which take into account ambient concentrations in each SRA, the area of project disturbance, and the distance to the nearest sensitive receptor (SCAQMD 2014). The SCAQMD developed the LSTs in response to environmental justice concerns raised by the public regarding exposure of individuals to criteria air pollutants in local communities (SCAQMD 2014). Accordingly, LSTs were designed to provide assistance and guidance for other public agencies to determine whether emissions from projects could generate significant adverse localized air quality impacts (SCAQMD 2014). Because the project would not generate on-site emissions of fugitive dust (as included in the estimated on-site PM_{10} and $PM_{2.5}$ emissions along with exhaust particulate matter) that would exceed the SCAQMD LSTs, estimated project-generated fugitive dust would result in a less than significant localized impact at sensitive receptors near the project site.

Health Impacts of Carbon Monoxide

As explained in Section 2.4.2.3, Carbon Monoxide Hotspots, to verify that the project would not cause or contribute to a violation of the CO standard, a screening evaluation of the potential for dCO hotspots was conducted based on the TIS (KHR Associates 2018a) results and the Caltrans *Transportation Project-Level Carbon Monoxide Protocol* (CO Protocol; 1997).

The proposed project's TIS evaluated 18 intersections. As determined by the TIS using data from the City of Torrance and the Transportation Division, the following intersections under the Cumulative Year (2019) operate at LOS E or worse during the AM or PM peak hours:

- Hawthorne Boulevard/Pacific Coast Highway (LOS E in AM and LOS F in PM)
- Crenshaw Boulevard/Rolling Hills Road (LOS F in AM)
- Crenshaw Boulevard/Pacific Coast Highway (LOS E in AM and PM)
- Hawthorne Boulevard/Palos Verdes Drive North (LOS E in AM)

- Crenshaw Boulevard/Palos Verdes Drive North (LOS F in AM and PM)
- Rolling Hills Road/Palos Verdes Drive North (LOS F in AM and PM)
- Pacific Coast Highway/Calle Mayor (LOS F in AM and PM)

For each scenario (existing with project; existing with ambient growth and the proposed project; existing with ambient growth, cumulative projects, and the proposed project), the screening evaluation presents LOS with project improvements (mitigation), whether the recommended improvements (mitigation measures) are feasible, and whether a quantitative CO hotspots analysis may be required. According to the CO Protocol, there is a cap on the number of intersections that need to be analyzed for any one project. For a single project with multiple intersections, only the three intersections representing the worst LOS ratings of the project, and, to the extent they are different intersections, the three intersections representing the highest traffic volumes, need be analyzed. For each intersection failing a screening test as described in this protocol, an additional intersection should be analyzed (Caltrans 1997).

Based on the CO hotspot screening evaluation (Appendix B), the intersections that exceeded the CO hotspot screening criteria shown above all have different geometries and are signalized. Therefore, all intersections that exceeded the CO hotspot screening criteria were evaluated. The potential impact of the project on local CO levels was assessed at this intersection with the Caltrans CL4 interface based on the California LINE Source Dispersion Model (CALINE4), which allows microscale CO concentrations to be estimated along each roadway corridor or near intersections (Caltrans 1998a).

The emissions factor represents the weighted average emissions rate of the local SCAB vehicle fleet expressed in grams per mile per vehicle. Consistent with the TIS, emissions factors for 2019 were used for the analysis. Emissions factors for 2019 were predicted by EMFAC2014 based on a 5 mph average speed for all of the intersections for approach and departure segments. The hourly traffic volume anticipated to travel on each link, in units of vehicles per hour, was based on the TIS. Modeling assumptions are outlined in Appendix B.

Four receptor locations at each intersection were modeled to determine CO ambient concentrations. A receptor was assumed on the sidewalk at each corner of the modeled intersections, for a total of four receptors adjacent to the intersection, to represent the future possibility of extended outdoor exposure. CO concentrations were modeled at these locations to assess the maximum potential CO exposure that could occur in 2019. A receptor height of 5.9 feet (1.8 meters) was used in accordance with Caltrans recommendations for all receptor locations (Caltrans 1998b).

The SCAQMD provides projected future concentrations of CO emissions in order to assist the CEQA practitioner with a CO Hotspots Analysis. The projected future 1-hour CO background concentration of 5.1 parts per million for 2020 for the Long Beach Webster monitoring station was assumed in the CALINE4 model for 2019 (SCAQMD 2018b). The maximum CO concentration measured at the Long Beach Webster monitoring station over the last 3 years was 3.7 parts per million, which was measured in 2014; as such, the SCAQMD projected 1-hour CO ambient concentration of 5.1 parts per million is a conservative assumption. The 8-hour average CO concentration was added to the SCAQMD projected 8-hour CO ambient concentration of 3.9 parts per million for 2020 from the Long Beach Webster monitoring station to compare to the CAAQS (SCAQMD 2018b).

The CALINE4 predicted CO concentrations are shown in Table 12. Model input and output data are provided in Appendix B.

Table 12
CALINE4 Predicted Carbon Monoxide Concentrations

Intersection	Maximum Modeled Carbon Monoxide Impact (ppm)	
	1-hour	*8-hour*
Hawthorne Boulevard/Pacific Coast Highway	6.0	4.53
Crenshaw Boulevard/Rolling Hills Road	5.7	4.32
Crenshaw Boulevard/Pacific Coast Highway	6.1	4.60
Hawthorne Boulevard/Palos Verdes Drive North	5.7	4.32
Crenshaw Boulevard/Palos Verdes Drive North	5.8	4.39
Rolling Hills Road/Palos Verdes Drive North	5.6	4.25
Pacific Coast Highway/Calle Mayor	5.7	4.32

Source: Caltrans 1998a.
Notes: ppm = parts per million by volume.

As shown in Table 12, the maximum CO concentration predicted for the 1-hour averaging period at the studied intersections would be 6.1 ppm, which is below the 1-hour CO CAAQS of 20 ppm (CARB 2016c). The maximum predicted 8-hour CO concentration of 4.60 ppm at the studied intersections would be below the 8-hour CO CAAQS of 9.0 ppm (CARB 2016c). Neither the 1-hour nor the 8-hour CAAQS would be equaled or exceeded at any of the intersections studied. Accordingly, the project would not cause or contribute to violations of the CAAQS, and would not result in exposure of sensitive receptors to localized high concentrations of CO. As such, impacts would be less than significant to sensitive receptors with regard to potential CO hotspots resulting from project contribution to cumulative traffic-related air quality impacts, and no mitigation is required.

Health Impacts of Toxic Air Contaminants

Construction Health Risk

As discussed in Section 2.4.2.4, Construction Health Risk Assessment, an HRA was performed to estimate the Maximum Individual Cancer Risk and the Chronic Hazard Index for residential receptors, off-site worker receptors, and the nearest school as a result of project construction. Results of the construction HRA are presented in Table 13.

Table 13
Construction Health Risk Assessment Results

Impact Parameter	Units	Project Impact	CEQA Threshold	Level of Significance
Maximum Individual Cancer Risk—Residential	Per million	4.53	10	Less than significant
Maximum Individual Cancer Risk—Worker	Per million	0.15	10	Less than significant
Maximum Individual Cancer Risk— Walteria Elementary School	Per million	0.12	10	Less than significant
Chronic Hazard Index—Residential	Index value	0.002	1.0	Less than significant
Chronic Hazard Index—Worker	Index value	0.004	1.0	Less than significant
Chronic Hazard Index— Walteria Elementary School	Index value	0.0003	1.0	Less than significant

Source: SCAQMD 2015.
Notes: CEQA = California Environmental Quality Act.
See Appendix C.

As shown in Table 13, project construction activities would result in a Residential Maximum Individual Cancer Risk of 4.53 in 1 million, a Worker Maximum Individual Cancer Risk of 0.15 in 1 million, and a School Maximum Individual Cancer Risk of 0.12 in 1 million, which are all below the significance threshold of 10 in 1 million. Project construction would also result in a Residential Chronic Hazard Index of 0.002, a Worker Chronic Hazard Index of 0.004, and a School Chronic Hazard Index of 0.0003, which are well below the 1.0 significance threshold. The project construction TAC health risk impacts would be less than significant.

Operational Health Risk

There is an existing gasoline dispensing facility located approximately 250 feet from the northern project property line and approximately within 315 feet from the nearest residential building. The CARB Air Quality and Land Use Handbook: A Community Health Perspective (2005) recommends avoiding siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater), and a 50-foot separation is recommended for typical gas dispensing facilities. Based on aerial imagery (Google Earth 2016), the existing Chevron gasoline station has four pump islands (eight fuel pumps), which is not considered to be a large gasoline dispensing facility. As such, project sensitive receptors (i.e., future residents) would not be located within the recommended siting distance of 50 feet for a typical gas station.

No residual TAC emissions and corresponding cancer risk are anticipated after construction, and no long-term sources of TAC emissions are anticipated during operation of the project. Thus, the project would not result in a long-term (i.e., 9-year, 30-year, or 70-year) source of TAC emissions. Therefore, the exposure of project-related TAC emission impacts to sensitive receptors would be less than significant.

Health Impacts of Other Criteria Air Pollutants

Construction and operation of the project would result in emissions that would not exceed the SCAQMD thresholds for any criteria air pollutants including VOC, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$. VOCs would be associated with motor vehicles, construction equipment, and architectural coatings; however, project-generated VOC emissions would not result in the exceedances of the SCAQMD thresholds as shown in Table 5. Generally, the VOCs in architectural coatings are of relatively low toxicity. Additionally, SCAQMD Rule 1113 restricts the VOC content of coatings for both construction and operational applications.

VOCs and NO_x are precursors to O_3, for which the SCAB is designated as nonattainment with respect to the NAAQS and CAAQS. The health effects associated with O_3 are generally associated with reduced lung function. The contribution of VOCs and NO_x to regional ambient O_3 concentrations is the result of complex photochemistry. The increases in O_3 concentrations in the SCAB due to O_3 precursor emissions tend to be found downwind from the source location to allow time for the photochemical reactions to occur. However, the potential for exacerbating excessive O_3 concentrations would also depend on the time of year that the VOC emissions would occur because exceedances of the O_3 NAAQS and CAAQS tend to occur between April and October when solar radiation is highest. The holistic effect of a single project's emissions of O_3 precursors is speculative due to the lack of quantitative methods to assess this impact. Nonetheless, the VOC and NO_x emissions associated with project construction and operation could minimally contribute to regional O_3 concentrations and the associated health impacts. Because of the minimal contribution during construction and operation, health impacts would be considered less than significant.

Construction and operation of the project would also not exceed thresholds for PM_{10} or $PM_{2.5}$ and would not contribute to exceedances of the NAAQS and CAAQS for particulate matter or would obstruct the SCAB from coming into attainment for these pollutants. The project would also not result in substantial DPM emissions during construction and operation, and therefore, would not result in significant health effects related to DPM exposure. Additionally, the project would implement dust control strategies and be required to comply with SCAQMD Rule 403, which limits the amount of fugitive dust generated during construction. Due to the minimal contribution of particulate matter during construction and operation, health impacts would be considered less than significant.

Construction and operation of the project would not contribute to exceedances of the NAAQS and CAAQS for NO_2. Health impacts that result from NO_2 and NO_x include respiratory irritation, which could be experienced by nearby receptors during the periods of heaviest use of off-road construction equipment. However, project construction would be relatively short term, and off-road construction equipment would be operating at various portions of the site and would not be concentrated in one portion of the site at any one time. In addition, existing NO_2 concentrations in the area are well below the NAAQS and CAAQS standards. Construction and operation of the project would not require use of any stationary sources (e.g., diesel generators, boilers) that would create substantial, localized NO_x impacts. Therefore, potential health impacts associated with NO_2 and NO_x would be considered less than significant.

CO tends to be a localized impact associated with congested intersections. The associated potential for CO hotspots were discussed previously and are determined to be a less-than-significant impact. Thus, the project's CO emissions would not contribute to significant health effects associated with this pollutant. In summary, construction and operation of the project would not result in exceedances of the SCAQMD significance thresholds for criteria pollutants and potential health impacts associated with criteria air pollutants would be less than significant.

2.5.5 Threshold AQ-5

Would the project create objectionable odors affecting a substantial number of people?

The occurrence and severity of potential odor impacts depends on numerous factors. The nature, frequency, and intensity of the source; the wind speeds and direction; and the sensitivity of receiving location each contribute to the intensity of the impact. Although offensive odors seldom cause physical harm, they can be annoying and cause distress among the public and generate citizen complaints.

Odors would be potentially generated from vehicles and equipment exhaust emissions during construction of the project. Potential odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment, architectural coatings, and asphalt pavement application. Such odors would disperse rapidly from the project site and generally occur at magnitudes that would not affect substantial numbers of people. Therefore, impacts associated with odors during construction would be less than significant.

Land uses and industrial operations associated with odor complaints include agricultural uses, wastewater treatment plants, food-processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding (SCAQMD 1993). The project entails operation of a residential development and would not result in the creation of a land use that is commonly associated with odors. Therefore, project operations would result in an odor impact that is less than significant.

3 GREENHOUSE GAS EMISSIONS

3.1 Environmental Setting

3.1.1 Climate Change Overview

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind patterns, lasting for an extended period (decades or longer). The Earth's temperature depends on the balance between energy entering and leaving the planet's system. Many factors, both natural and human, can cause changes in Earth's energy balance, including variations in the sun's energy reaching Earth, changes in the reflectivity of Earth's atmosphere and surface, and changes in the greenhouse effect, which affects the amount of heat retained by Earth's atmosphere (EPA 2017a).

The greenhouse effect is the trapping and build-up of heat in the atmosphere (troposphere) near the Earth's surface. The greenhouse effect traps heat in the troposphere through a threefold process as follows: Short-wave radiation emitted by the Sun is absorbed by the Earth, the Earth emits a portion of this energy in the form of long-wave radiation, and GHGs in the upper atmosphere absorb this long-wave radiation and emit it into space and toward the Earth. The greenhouse effect is a natural process that contributes to regulating the Earth's temperature and creates a pleasant, livable environment on the Earth. Human activities that emit additional GHGs to the atmosphere increase the amount of infrared radiation that gets absorbed before escaping into space, thus enhancing the greenhouse effect and causing the Earth's surface temperature to rise.

The scientific record of the Earth's climate shows that the climate system varies naturally over a wide range of time scales and that, in general, climate changes prior to the Industrial Revolution in the 1700s can be explained by natural causes, such as changes in solar energy, volcanic eruptions, and natural changes in GHG concentrations. Recent climate changes, in particular the warming observed over the past century, however, cannot be explained by natural causes alone. Rather, it is extremely likely that human activities have been the dominant cause of that warming since the mid-twentieth century and is the most significant driver of observed climate change (IPCC 2013; EPA 2017a). Human influence on the climate system is evident from the increasing GHG concentrations in the atmosphere, positive radiative forcing, observed warming, and improved understanding of the climate system (IPCC 2013). The atmospheric concentrations of GHGs have increased to levels unprecedented in the last 800,000 years, primarily from fossil fuel emissions and secondarily from emissions associated with land use changes (IPCC 2013). Continued emissions of GHGs will cause further warming and changes in all components of the climate system, which is discussed further in Section 3.3.2, Potential Effects of Climate Change.

3.1.2 Greenhouse Gases

A GHG is any gas that absorbs infrared radiation in the atmosphere; in other words, GHGs trap heat in the atmosphere. As defined in California Health and Safety Code section 38505(g) for purposes of administering many of the state's primary GHG emissions reduction programs, GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3) (see also 14 CCR 15364.5).[11] Some GHGs, such as CO_2, CH_4, and N_2O, occur naturally and are emitted into the atmosphere through natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Manufactured GHGs, which have a much greater heat-absorption potential than CO_2, include fluorinated gases, such as HFCs, PFCs, and SF_6, which are associated with certain industrial products and processes. The following paragraphs provide a summary of the most common GHGs and their sources.[12]

Carbon Dioxide. CO_2 is a naturally occurring gas and a by-product of human activities and is the principal anthropogenic GHG that affects the Earth's radiative balance. Natural sources of CO_2 include respiration of bacteria, plants, animals, and fungus; evaporation from oceans; volcanic out-gassing; and decomposition of dead organic matter. Human activities that generate CO_2 are from the combustion of fuels such as coal, oil, natural gas, and wood and changes in land use.

Methane. CH_4 is produced through both natural and human activities. CH_4 is a flammable gas and is the main component of natural gas. Methane is produced through anaerobic (without oxygen) decomposition of waste in landfills, flooded rice fields, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.

Nitrous Oxide. N_2O is produced through natural and human activities, mainly through agricultural activities and natural biological processes, although fuel burning and other processes also create N_2O. Sources of N_2O include soil cultivation practices (microbial processes in soil and water), especially the use of commercial and organic fertilizers, manure management, industrial processes (such as in nitric acid production, nylon production, and fossil-fuel-fired power plants), vehicle emissions, and using N_2O as a propellant (such as in rockets, racecars, and aerosol sprays).

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[11] Climate forcing substances include GHGs and other substances such as black carbon and aerosols. This discussion focuses on the seven GHGs identified in the California Health and Safety Code Section 38505, because impacts associated with other climate forcing substances are not evaluated herein.

[12] The descriptions of GHGs are summarized from the Intergovernmental Panel on Climate Change's Second Assessment Report and Fourth Assessment Report (IPCC 1995, 2007), CARB's Glossary of Terms Used in GHG Inventories (2015), and EPA's Glossary of Climate Change Terms (2016e).

Fluorinated Gases. Fluorinated gases (also referred to as F-gases) are synthetic powerful GHGs emitted from many industrial processes. Fluorinated gases are commonly used as substitutes for stratospheric ozone-depleting substances (e.g., chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and halons). The most prevalent fluorinated gases include the following:

- **Hydrofluorocarbons:** HFCs are compounds containing only hydrogen, fluorine, and carbon atoms. HFCs are synthetic chemicals used as alternatives to ozone-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are used in manufacturing.
- **Perfluorocarbons:** PFCs are a group of human-made chemicals composed of carbon and fluorine only. These chemicals were introduced as alternatives, with HFCs, to the ozone depleting substances. The two main sources of PFCs are primary aluminum production and semiconductor manufacturing. Since PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere, these chemicals have long lifetimes, ranging between 10,000 and 50,000 years.
- **Sulfur Hexafluoride:** SF_6 is a colorless gas soluble in alcohol and ether and slightly soluble in water. SF_6 is used for insulation in electric power transmission and distribution equipment, semiconductor manufacturing, the magnesium industry, and as a tracer gas for leak detection.
- **Nitrogen Trifluoride:** NF_3 is used in the manufacture of a variety of electronics, including semiconductors and flat panel displays.

3.1.3 Global Warming Potential

Gases in the atmosphere can contribute to climate change both directly and indirectly. Direct effects occur when the gas itself absorbs radiation. Indirect radiative forcing occurs when chemical transformations of the substance produce other GHGs, when a gas influences the atmospheric lifetimes of other gases, and/or when a gas affects atmospheric processes that alter the radiative balance of the Earth (e.g., affect cloud formation or albedo) (EPA 2016e). The Intergovernmental Panel on Climate Change developed the global warming potential (GWP) concept to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP of a GHG is defined as the ratio of the time-integrated radiative forcing from the instantaneous release of 1 kilogram of a trace substance relative to that of 1 kilogram of a reference gas (IPCC 2014). The reference gas used is CO_2; therefore, GWP-weighted emissions are measured in metric tons of CO_2 equivalent (MT CO_2e).

The current version of CalEEMod (version 2016.3.2) assumes that the GWP for CH_4 is 25 (so emissions of 1 MT of CH_4 are equivalent to emissions of 25 MT of CO_2), and the GWP for N_2O is 298, based on the Intergovernmental Panel on Climate Change's Fourth Assessment Report (IPCC 2007). The GWP values identified in CalEEMod were applied to the project.

3.2 Regulatory Setting

3.2.1 Federal Regulations

Massachusetts v. EPA. In *Massachusetts v. EPA* (April 2007), the U.S. Supreme Court directed the EPA administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In December 2009, the administrator signed a final rule with the following two distinct findings regarding GHGs under Section 202(a) of the federal Clean Air Act:

- The Administrator found that elevated concentrations of GHGs—CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations. This is the "endangerment finding."
- The Administrator further found the combined emissions of GHGs—CO_2, CH_4, N_2O, and HFCs—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is the "cause or contribute finding."

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the Clean Air Act.

Energy Independence and Security Act of 2007. The Energy Independence and Security Act of 2007 (December 2007), among other key measures, would do the following, which would aid in the reduction of national GHG emissions (EPA 2007):

- Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
- Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020, and directs National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.

- Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy-efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

Federal Vehicle Standards. In response to the U.S. Supreme Court ruling discussed above, the Bush Administration issued Executive Order (EO) 13432 in 2007 directing the EPA, the Department of Transportation, and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the NHTSA issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011, and in 2010, the EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016 (EPA 2010).

In 2010, President Barack Obama issued a memorandum directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The proposed standards projected to achieve 163 grams per mile of CO_2 in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021 (77 FR 62624–63200). On January 12, 2017, the EPA finalized its decision to maintain the current GHG emissions standards for model years 2022–2025 cars and light trucks (EPA 2017b).

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018 (76 FR 57106–57513). The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6% to 23% over the 2010 baselines.

In August 2016, the EPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks. The final standards are expected to lower CO_2 emissions by approximately 1.1 billion MT and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program (EPA and NHTSA 2016).

Clean Power Plan and New Source Performance Standards for Electric Generating Units. On October 23, 2015, EPA published a final rule (effective December 22, 2015) establishing the Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units (80 FR 64510–64660), also known as the Clean Power Plan. These guidelines prescribe how states must develop plans to reduce GHG emissions from existing fossil-fuel-fired electric generating units. The guidelines establish CO_2 emission performance rates representing the best system of emission reduction for two subcategories of existing fossil-fuel-fired electric generating units: (1) fossil-fuel-fired electric utility steam-generating units, and (2) stationary combustion turbines. Concurrently, the EPA published a final rule (effective October 23, 2015) establishing Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units (80 FR 64661–65120). The rule prescribes CO_2 emission standards for newly constructed, modified, and reconstructed affected fossil-fuel-fired electric utility generating units. The U.S. Supreme Court stayed implementation of the Clean Power Plan pending resolution of several lawsuits.

3.2.2 State Regulations

The statewide GHG emissions regulatory framework is summarized below by category: state climate change targets, building energy, renewable energy and energy procurement, mobile sources, solid waste, water, and other state regulations and goals. The following text describes executive orders, legislation, regulations, and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues.

State Climate Change Targets

The state has taken a number of actions to address climate change. These include executive orders, legislation, and CARB plans and requirements. These are summarized below.

EO S-3-05. EO S-3-05 (June 2005) established California's GHG emissions reduction targets and laid out responsibilities among the state agencies for implementing the EO and for reporting on progress toward the targets. This EO established the following targets:

- By 2010, reduce GHG emissions to 2000 levels
- By 2020, reduce GHG emissions to 1990 levels
- By 2050, reduce GHG emissions to 80% below 1990 levels

EO S-3-05 also directed the California Environmental Protection Agency to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. The Climate Action Team was formed, which subsequently issued reports from 2006 to 2010 (CAT 2016).

AB 32. In furtherance of the goals established in EO S-3-05, the Legislature enacted AB 32 (Núñez and Pavley). The bill is referred to as the California Global Warming Solutions Act of 2006 (September 27, 2006). AB 32 provided initial direction on creating a comprehensive multiyear program to limit California's GHG emissions at 1990 levels by 2020 and initiate the transformations required to achieve the state's long-range climate objectives.

SB 32 and AB 197. SB 32 and AB 197 (enacted in 2016) are companion bills. SB 32 codified the 2030 emissions reduction goal of EO B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40% below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the Senate and three members of the Assembly, in order to provide ongoing oversight over implementation of the state's climate policies. AB 197 also added two members of the Legislature to the Board as nonvoting members; requires CARB to make available and update (at least annually via its website) emissions data for GHGs, criteria air pollutants, and TACs from reporting facilities; and, requires CARB to identify specific information for GHG emissions reduction measures when updating the Scoping Plan.

CARB's 2007 Statewide Limit. In 2007, in accordance with California Health and Safety Code, Section 38550, CARB approved a statewide limit on the GHG emissions level for year 2020 consistent with the determined 1990 baseline (427 million metric tons (MMT) CO_2e).

CARB's Climate Change Scoping Plan. One specific requirement of AB 32 is for CARB to prepare a "scoping plan" for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020 (Health and Safety Code, Section 38561(a)), and to update the plan at least once every 5 years. In 2008, CARB approved the first scoping plan. The *Climate Change Scoping Plan: A Framework for Change* (Scoping Plan) included a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the state's long-range climate objectives. The key elements of the Scoping Plan include the following (CARB 2008):

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards
2. Achieving a statewide renewable energy mix of 33%

3. Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85% of California's GHG emissions
4. Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets
5. Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard (LCFS; 17 Cal. Code Regs., Section 95480 et seq.)
6. Creating targeted fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation

The Scoping Plan also identified local governments as essential partners in achieving California's goals to reduce GHG emissions because they have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Specifically, the Scoping Plan encouraged local governments to adopt a reduction goal for municipal operations and for community emissions to reduce GHGs by approximately 15% from then levels (2008) by 2020. Many local governments developed community-scale local GHG reduction plans based on this Scoping Plan recommendation.

In 2014, CARB approved the first update to the Scoping Plan. The *First Update to the Climate Change Scoping Plan: Building on the Framework* (First Update) defined the state's GHG emission reduction priorities for the next 5 years and laid the groundwork to start the transition to the post-2020 goals set forth in EO S-3-05 and EO B-16-2012. The First Update concluded that California is on track to meet the 2020 target but recommended a 2030 mid-term GHG reduction target be established to ensure a continuum of action to reduce emissions. The First Update recommended a mix of technologies in key economic sectors to reduce emissions through 2050 including: energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings and industrial machinery; decarbonizing electricity and fuel supplies; and, the rapid market penetration of efficient and clean energy technologies. As part of the First Update, CARB recalculated the state's 1990 emissions level, using more recent global warming potentials identified by the Intergovernmental Panel on Climate Change, from 427 MMT CO_2e to 431 MMT CO_2e.

In 2015, as directed by EO B-30-15, CARB began working on an update to the Scoping Plan to incorporate the 2030 target of 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050 as set forth in S-3-05. The Governor called on California to pursue a new and ambitious set of strategies, in line with the five climate change pillars from his inaugural address, to reduce GHG emissions and prepare for the unavoidable impacts of climate change. In the summer of 2016, the Legislature affirmed the importance of addressing climate change through passage of Senate Bill 32 (SB 32) (Pavley, Chapter 249, Statutes of 2016).

In January 2017, CARB released the *2017 Climate Change Scoping Plan Update (2030 Scoping Plan)* for public review and comment (CARB 2017b). The 2030 Scoping Plan builds on the successful framework established in the initial Scoping Plan and First Update, while identifying new, technologically feasible and cost-effective strategies that will serve as the framework to achieve the 2030 GHG target and define the state's climate change priorities to 2030 and beyond. The strategies' known commitments include implementing renewable energy and energy efficiency (including the mandates of SB 350), increased stringency of the LCFS, measures identified in the Mobile Source and Freight Strategies, measures identified in the proposed Short-Lived Climate Pollutant Plan, and increased stringency of SB 375 targets. To fill the gap in additional reductions needed to achieve the 2030 target, it recommends continuing the Cap-and-Trade Program and a measure to reduce GHGs from refineries by 20%.

For local governments, the 2030 Scoping Plan replaced the initial Scoping Plan's 15% reduction goal with a recommendation to aim for a community-wide goal of no more than 6 MT CO_2e per capita by 2030 and no more than 2 MT CO_2e per capita by 2050, which are consistent with the state's long-term goals. These goals are also consistent with the Under 2 MOU (Under 2 2016) and the Paris Agreement (UNFCCC 2016), which are developed around the scientifically based levels necessary to limit global warming below 2°C. The 2030 Scoping Plan recognized the benefits of local government GHG planning (e.g., through CAPs) and provide more information regarding tools CARB is working on to support those efforts. It also recognizes the CEQA streamlining provisions for project level review where there is a legally adequate CAP.[13] On December 14, 2017, CARB's Governing Board approved the Second Update.

The Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of AB 32, SB 32, and the EOs and establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. A project is considered consistent with the

13 *Sierra Club v. County of Napa* (2004) 121 Cal.App.4th 1490; *San Francisco Tomorrow et al. v. City and County of San Francisco* (2015) 229 Cal.App.4th 498; *San Franciscans Upholding the Downtown Specific Plan v. City & County of San Francisco* (2002) 102 Cal.App.4th 656; *Sequoyah Hills Homeowners Assn. V. City of Oakland* (1993) 23 Cal.App.4th 704, 719.

statutes and EOs if it meets the general policies in reducing GHG emissions in order to facilitate the achievement of the state's goals and does not impede attainment of those goals. As discussed in several cases, a given project need not be in perfect conformity with every planning policy or goal to be consistent. A project would be consistent if it would further the objectives and not obstruct their attainment.

CARB's Regulations for the Mandatory Reporting of Greenhouse Gas Emissions. CARB's Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (17 CCR 95100–95157) incorporated by reference certain requirements that EPA promulgated in its Final Rule on Mandatory Reporting of Greenhouse Gases (40 CFR, Part 98). Specifically, Section 95100(c) of the Mandatory Reporting Regulation incorporated those requirements that EPA promulgated in the Federal Register on October 30, 2009, July 12, 2010, September 22, 2010, October 28, 2010, November 30, 2010, December 17, 2010, and April 25, 2011. In general, entities subject to the Mandatory Reporting Regulation that emit over 10,000 MT CO_2e per year are required to report annual GHGs through the California Electronic GHG Reporting Tool. Certain sectors, such as refineries and cement plants, are required to report regardless of emission levels. Entities that emit more than the 25,000 MT CO_2e per year threshold are required to have their GHG emission report verified by a CARB-accredited third party.

EO B-18-12. EO B-18-12 (April 2012) directed state agencies, departments, and other entities under the governor's executive authority to take action to reduce entity-wide GHG emissions by at least 10% by 2015 and 20% by 2020, as measured against a 2010 baseline. EO B-18-12 also established goals for existing state buildings for reducing grid-based energy purchases and water use.

EO B-30-15. EO B-30-15 (April 2015) identified an interim GHG reduction target in support of targets previously identified under S-3-05 and AB 32. EO B-30-15 set an interim target goal of reducing GHG emissions to 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050 as set forth in S-3-05. To facilitate achieving this goal, EO B-30-15 called for CARB to update the Scoping Plan to express the 2030 target in terms of MMT CO_2e. The EO also called for state agencies to continue to develop and implement GHG emission reduction programs in support of the reduction targets.

EO B-55-18. EO B-55-18 (September 2018) establishes a statewide policy for the state to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. The goal is an addition to the existing statewide targets of reducing the state's GHG emissions. CARB will work with relevant state agencies to ensure that future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal.

SB 605 and SB 1383. SB 605 (2014) requires CARB to complete a comprehensive strategy to reduce emissions of SLCPs in the state; and SB 1383 (2016) requires CARB to approve and implement that strategy by January 1, 2018. SB 1383 also establishes specific targets for the reduction of SLCPs (40% below 2013 levels by 2030 for methane and HFCs, and 50% below 2013 levels by 2030 for anthropogenic black carbon), and provides direction for reductions from dairy and livestock operations and landfills. Accordingly, and as mentioned above, CARB adopted its *Short-Lived Climate Pollutant Reduction Strategy* (*SLCP Reduction Strategy*) in March 2017. The *SLCP Reduction Strategy* establishes a framework for the statewide reduction of emissions of black carbon, methane, and fluorinated gases.

Building Energy

Title 24, Part 6. Title 24 of the California Code of Regulations was established in 1978 and serves to enhance and regulate California's building standards. While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically established Building Energy Efficiency Standards that are designed to ensure new and existing buildings in California achieve energy efficiency and preserve outdoor and indoor environmental quality. These energy efficiency standards are reviewed every few years by the Building Standards Commission and the California Energy Commission (CEC) (and revised if necessary) (California Public Resources Code, Section 25402(b)(1)). The regulations receive input from members of industry, as well as the public, with the goal of "reducing of wasteful, uneconomic, inefficient, or unnecessary consumption of energy" (California Public Resources Code, Section 25402). These regulations are carefully scrutinized and analyzed for technological and economic feasibility (California Public Resources Code, Section 25402(d)) and cost effectiveness (California Public Resources Code, Sections 25402(b)(2) and (b)(3)). As a result, these standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment.

The current Title 24 standards are the 2016 Title 24 building energy efficiency standards, which became effective January 1, 2017. The updated standards will further reduce energy used and associated GHG emissions compared to previous standards, such as the 2013 Title 24 standards. In general, single-family homes built to the 2016 standards are anticipated to use about 28% less energy for lighting, heating, cooling, ventilation, and water heating than those built to the 2013 standards, and nonresidential buildings built to the 2016 standards will use an estimated 5% less energy than those built to the 2013 standards (CEC 2015a, 2015b).

Title 24, Part 11. In addition to the CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24) is commonly referred to as CALGreen, and establishes minimum mandatory standards as well as voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The CALGreen standards took effect in January 2011 and instituted mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential and state-owned buildings and schools and hospitals. The CALGreen 2016 standards became effective January 1, 2017. The mandatory standards require the following (24 CCR, Part 11):

- Mandatory reduction in indoor water use through compliance with specified flow rates for plumbing fixtures and fittings
- Mandatory reduction in outdoor water use through compliance with a local water efficient landscaping ordinance or the California Department of Water Resources' Model Water Efficient Landscape Ordinance
- 65% of construction and demolition waste must be diverted from landfills
- Mandatory inspections of energy systems to ensure optimal working efficiency
- Inclusion of electric vehicle charging stations or designated spaces capable of supporting future charging stations
- Low-pollutant emitting exterior and interior finish materials, such as paints, carpets, vinyl flooring, and particle boards

The CALGreen standards also include voluntary efficiency measures that are provided at two separate tiers and implemented at the discretion of local agencies and applicants. CALGreen's Tier 1 standards call for a 15% improvement in energy requirements; stricter water conservation, 65% diversion of construction and demolition waste, 10% recycled content in building materials, 20% permeable paving, 20% cement reduction, and cool/solar-reflective roofs. CALGreen's more rigorous Tier 2 standards call for a 30% improvement in energy requirements, stricter water conservation, 80% diversion of construction and demolition waste, 15% recycled content in building materials, 30% permeable paving, 25% cement reduction, and cool/solar-reflective roofs.

The California Public Utilities Commission (CPUC), CEC, and CARB also have a shared, established goal of achieving zero net energy (ZNE) performance for new construction in California. The key policy timelines include: (1) all new residential construction in California will be ZNE by 2020, and (2) all new commercial construction in California will be ZNE by 2030.[14]

[14] See, e.g., CPUC 2013. It is expected that achievement of the ZNE goal will occur via revisions to the Title 24 standards.

Title 20. Title 20 of the California Code of Regulations requires manufacturers of appliances to meet state and federal standards for energy and water efficiency. The CEC certifies an appliance based on a manufacturer's demonstration that the appliance meets the standards. New appliances regulated under Title 20 include: refrigerators, refrigerator-freezers and freezers; room air conditioners and room air-conditioning heat pumps; central air conditioners; spot air conditioners; vented gas space heaters; gas pool heaters; plumbing fittings and plumbing fixtures; fluorescent lamp ballasts; lamps; emergency lighting; traffic signal modules; dishwaters; clothes washers and dryers; cooking products; electric motors; low voltage dry-type distribution transformers; power supplies; televisions and consumer audio and video equipment; and battery charger systems. Title 20 presents protocols for testing each type of appliance covered under the regulations and appliances must meet the standards for energy performance, energy design, water performance, and water design. Title 20 contains three types of standards for appliances: federal and state standards for federally regulated appliances, state standards for federally regulated appliances, and state standards for non-federally regulated appliances.

SB 1. SB 1 (Murray) (August 2006) established a $3 billion rebate program to support the goal of the state to install rooftop solar energy systems with a generation capacity of 3,000 megawatts through 2016. SB 1 added sections to the California Public Resources Code, including Chapter 8.8 (California Solar Initiative), that require building projects applying for ratepayer-funded incentives for photovoltaic systems to meet minimum energy efficiency levels and performance requirements. Section 25780 established that it is a goal of the state to establish a self-sufficient solar industry. The goals included establishing solar energy systems as a viable mainstream option for both homes and businesses within 10 years of adoption, and placing solar energy systems on 50% of new homes within 13 years of adoption. SB 1, also termed "Go Solar California," was previously titled "Million Solar Roofs."

AB 1470 (Solar Water Heating). This bill established the Solar Water Heating and Efficiency Act of 2007. The bill makes findings and declarations of the Legislature relating to the promotion of solar water heating systems and other technologies that reduce natural gas demand. The bill defines several terms for purposes of the act. The bill requires the commission to evaluate the data available from a specified pilot program, and, if it makes a specified determination, to design and implement a program of incentives for the installation of 200,000 solar water heating systems in homes and businesses throughout the state by 2017.

Renewable Energy and Energy Procurement

SB 1078. SB 1078 (Sher) (September 2002) established the Renewables Portfolio Standard (RPS) program, which required an annual increase in renewable generation by the utilities equivalent to at least 1% of sales, with an aggregate goal of 20% by 2017. This goal was subsequently accelerated, requiring utilities to obtain 20% of their power from renewable sources by 2010 (see SB 107, EO S-14-08, and S-21-09).

SB 1368. SB 1368 (September 2006), required CEC to develop and adopt regulations for GHG emission performance standards for the long-term procurement of electricity by local publicly owned utilities. These standards must be consistent with the standards adopted by CPUC.

AB 1109. Enacted in 2007, AB 1109 required CEC to adopt minimum energy efficiency standards for general-purpose lighting, to reduce electricity consumption 50% for indoor residential lighting and 25% for indoor commercial lighting.

EO S-14-08. EO S-14-08 (November 2008) focused on the contribution of renewable energy sources to meet the electrical needs of California while reducing the GHG emissions from the electrical sector. This EO required that all retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the EO directed state agencies to take appropriate actions to facilitate reaching this target. The California Natural Resources Agency (CNRA), through collaboration with CEC and the California Department of Fish and Game (now the California Department of Fish and Wildlife), was directed to lead this effort.

EO S-21-09 and SB X1-2. EO S-21-09 (September 2009) directed CARB to adopt a regulation consistent with the goal of EO S-14-08 by July 31, 2010. CARB was further directed to work with CPUC and CEC to ensure that the regulation builds upon the RPS program and was applicable to investor-owned utilities, publicly owned utilities, direct access providers, and community choice providers. Under this order, CARB was to give the highest priority to those renewable resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health and can be developed the most quickly in support of reliable, efficient, cost-effective electricity system operations. On September 23, 2010, CARB initially approved regulations to implement a Renewable Electricity Standard. However, this regulation was not finalized because of subsequent legislation (SB X1-2, Simitian, statutes of 2011) signed by Governor Brown in April 2011.

SB X1 2 expanded the RPS by establishing a renewable energy target of 20% of the total electricity sold to retail customers in California per year by December 31, 2013, and 33% by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation (30 megawatts or less), digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, and that meets other specified requirements with respect to its location.

SB X1-2 applies to all electricity retailers in the state including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. All of these entities must meet the renewable energy goals listed above.

SB 350. SB 350 (October 2015) further expanded the RPS by establishing a goal of 50% of the total electricity sold to retail customers in California per year by December 31, 2030. In addition, SB 350 included the goal to double the energy efficiency savings in electricity and natural gas final end uses (such as heating, cooling, lighting, or class of energy uses on which an energy-efficiency program is focused) of retail customers through energy conservation and efficiency. The bill also requires CPUC, in consultation with CEC, to establish efficiency targets for electrical and gas corporations consistent with this goal.

SB 100. SB 100 (2018) increased the standards set forth in SB 350 establishing that 44% of the total electricity sold to retail customers in California per year by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of the retail sales of electricity to California by 2045. This bill requires that the achievement of 100% zero-carbon electricity resources do not increase the carbon emissions elsewhere in the western grid and that the achievement not be achieved through resource shuffling.

Mobile Sources

AB 1493. AB 1493 (Pavley) (July 2002) was enacted in a response to the transportation sector accounting for more than half of California's CO_2 emissions. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles that are primarily used for noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. When fully phased in, the near-term (2009–2012) standards will result in a reduction of about 22% in GHG emissions compared to the emissions from the 2002 fleet, while the mid-term (2013–2016) standards will result in a reduction of about 30%.

Heavy Duty Diesel. CARB adopted the final Heavy Duty Truck and Bus Regulation, Title 13, Division 3, Chapter 1, Section 2025, on December 31, 2014 to reduce PM and NO_x emissions from heavy-duty diesel vehicles. The rule requires PM filters be applied to newer heavier trucks and buses by January 1, 2012, with older vehicles required to comply by January 1, 2015. The rule will require nearly all diesel trucks and buses to be compliant with the 2010 model year engine requirement by January 1, 2023. CARB also adopted an Airborne Toxic Control Measure to limit idling of diesel-fueled commercial vehicles on December 12, 2013. This rule requires diesel-fueled vehicles with gross vehicle weights greater than 10,000 pounds to idle no more than 5 minutes at any location (13 CCR 2485).

EO S-1-07. EO S-1-07 (January 2007, implementing regulation adopted in April 2009) sets a declining LCFS for GHG emissions measured in CO_2e grams per unit of fuel energy sold in California. The target of the LCFS is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020 (17 CCR 95480 et seq.). The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered.

SB 375. SB 375 (Steinberg) (September 2008) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 requires CARB to adopt regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035 and to update those targets every 8 years. SB 375 requires the state's 18 regional metropolitan planning organizations (MPOs) to prepare a sustainable communities strategy (SCS) as part of their regional transportation plan (RTP) that will achieve the GHG reduction targets set by CARB. If a MPO is unable to devise an SCS to achieve the GHG reduction target, the MPO must prepare an alternative planning strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

Pursuant to California Government Code, Section 65080(b)(2)(K), an SCS does not (1) regulate the use of land, (2) supersede the land use authority of cities and counties, or (3) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with it. Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the state-mandated housing element process.

In September 2010, CARB adopted the first SB 375 targets for the regional MPOs. The targets for SCAG are an 8% reduction in emissions per capita by 2020 and a 13% reduction by 2035. Achieving these goals through adoption of a SCS is the responsibility of the MPOs. SCAG adopted its first RTP/SCS in April 2012. The plan quantified a 9% reduction by 2020 and a 16% reduction by 2035 (SCAG 2012). In June 2012, CARB accepted SCAG's quantification of GHG reductions and its determination the SCS, if implemented, would achieve SCAG targets. On April 4, 2016, the SCAG Regional Council adopted the 2016 RTP/SCS, which builds upon the progress made in the 2012 RTP/SCS. The updated RTP/SCS quantified an 8% reduction by 2020 and an 18% reduction by 2030 (SCAG 2016). In June 2016, CARB accepted SCAG's quantification of GHG reductions and its determination the SCS, if implemented, would achieve SCAG targets.

Advanced Clean Cars Program and Zero-Emissions Vehicle Program. The Advanced Clean Cars program (January 2012) is a new emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package. The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars (CARB 2012). To improve air quality, CARB has implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. It is estimated that in 2025 cars will emit 75% less smog-forming pollution than the average new car sold today. To reduce GHG emissions, CARB, in conjunction with EPA and NHTSA, adopted new GHG standards for model year 2017 to 2025 vehicles; the new standards are estimated to reduce GHG emissions by 34% in 2025. The Zero-Emissions Vehicle (ZEV) program will act as the focused technology of the Advanced Clean Cars program by requiring manufacturers to produce increasing numbers of ZEVs and plug-in hybrid electric vehicles in the 2018 to 2025 model years.

EO B-16-12. EO B-16-12 (March 2012) required that state entities under the governor's direction and control support and facilitate the rapid commercialization of ZEVs. It ordered CARB, CEC, CPUC, and other relevant agencies to work with the Plug-In Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve benchmark goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 established a target reduction of GHG emissions from the transportation sector equaling 80% less than 1990 levels by 2050. This directive did not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare.

AB 1236. AB 1236 (October 2015) (Chiu) required a city, county, or city and county to approve an application for the installation of electric vehicle charging stations, as defined, through the issuance of specified permits unless the city or county makes specified written findings based upon substantial evidence in the record that the proposed installation would have a specific, adverse impact upon the public health or safety, and there is no feasible method to satisfactorily mitigate or avoid the specific, adverse impact. The bill provided for appeal of that decision to the planning commission, as specified. The bill provided that the implementation of consistent statewide standards to achieve the timely and cost-effective installation of electric vehicle charging stations is a matter of statewide concern. The bill required electric vehicle charging stations to meet specified standards. The bill required a city, county, or city and county with a population of 200,000 or more residents to adopt an ordinance, by September 30, 2016, that created an expedited and streamlined permitting process for electric vehicle charging stations, as specified. The bill also required a city, county, or city and county with a population of less than 200,000 residents to adopt this ordinance by September 30, 2017.

Water

EO B-29-15. In response to the ongoing drought in California, EO B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25% relative to water use in 2013. The term of the EO extended through February 28, 2016, although many of the directives have become permanent water-efficiency standards and requirements. The EO includes specific directives that set strict limits on water usage in the state. In response to EO B-29-15, the California Department of Water Resources has modified and adopted a revised version of the Model Water Efficient Landscape Ordinance that, among other changes, significantly increases the requirements for landscape water use efficiency and broadens its applicability to include new development projects with smaller landscape areas.

EO B-37-16. Issued May 2016, EO B-37-16 directs the State Water Resources Control Board (Water Board) to adjust emergency water conservation regulations through the end of January 2017 to reflect differing water supply conditions across the state. The Water Board must also develop a proposal to achieve a mandatory reduction of potable urban water usage that builds off the mandatory 25% reduction called for in EO B-29-15. The Water Board and Department of Water Resources will develop new, permanent water use targets that build upon the existing state law requirements that the state achieve 20% reduction in urban water usage by 2020. EO B-37-16 also specifies that the Water Board will permanently prohibit water-wasting practices such as hosing off sidewalks, driveways, and other hardscapes; washing automobiles with hoses not equipped with a shut-off nozzle; using non-recirculated water in a fountain or other decorative water feature; watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation; and irrigating ornamental turf on public street medians.

EO B-40-17. EO B-40-17 (April 2017) lifted the drought emergency in all California counties except Fresno, Kings, Tulare, and Tuolumne. It also rescinds EO B-29-15, but expressly states that EO B-37-16 remains in effect and directs the State Water Resources Control Board to continue development of permanent prohibitions on wasteful water use.

Solid Waste

AB 939 and AB 341. In 1989, AB 939, known as the Integrated Waste Management Act (California Public Resources Code, Sections 40000 et seq.), was passed because of the increase in waste stream and the decrease in landfill capacity. The statute established the California Integrated Waste Management Board, which oversees a disposal reporting system. AB 939 mandated a reduction of waste being disposed where jurisdictions were required to meet diversion goals of all solid waste through source reduction, recycling, and composting activities of 25% by 1995 and 50% by the year 2000.

AB 341 (Chapter 476, Statutes of 2011 (Chesbro)) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that it is the policy goal of the state that not less than 75% of solid waste generated be source-reduced, recycled, or composted by the year 2020, and annually thereafter. In addition, AB 341 required the California Department of Resources Recycling and Recovery (CalRecycle) to develop strategies to achieve the state's policy goal. CalRecycle conducted several general stakeholder workshops and several focused workshops and in August 2015 published a discussion document titled AB 341 Report to the Legislature, which identifies five priority strategies that CalRecycle believes would assist the state in reaching the 75% goal by 2020, legislative and regulatory recommendations and an evaluation of program effectiveness (CalRecycle 2012).

Other State Actions

SB 97. SB 97 (Dutton) (August 2007) directed the Governor's Office of Planning and Research to develop guidelines under CEQA for the mitigation of GHG emissions. In 2008, the Office of Planning and Research issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents. The advisory indicated that the lead agency should identify and estimate a project's GHG emissions, including those associated with vehicular traffic, energy consumption, water usage, and construction activities (OPR 2008). The advisory further recommended that the lead agency determine significance of the impacts and impose all mitigation measures necessary to reduce GHG emissions to a level that is less than significant. CNRA adopted the CEQA Guidelines amendments in December 2009, and they became effective in March 2010.

Under the amended CEQA Guidelines, a lead agency has the discretion to determine whether to use a quantitative or qualitative analysis or apply performance standards to determine the significance of GHG emissions resulting from a particular project (14 CCR 15064.4(a)). The CEQA Guidelines require a lead agency to 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 GHG emissions (14 CCR 15064.4(b)). The CEQA Guidelines also allow a lead agency to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures. The adopted amendments do not establish a GHG emission threshold, instead allowing a lead agency to develop, adopt, and apply its own thresholds of significance or those developed by other agencies or experts. CNRA also acknowledges that a lead agency may consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions (CNRA 2009a).

With respect to GHG emissions, the CEQA Guidelines state that lead agencies should "make a good faith effort, to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions (14 CCR 15064.4(a)). The CEQA Guidelines note that an agency may identify emissions by either selecting a "model or methodology" to quantify the emissions or by relying on "qualitative analysis or other performance based standards" (14 CCR 15064.4(a)). Section 15064.4(b) states that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment: (1) the extent to which a project may increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) 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 GHG emissions (14 CCR 15064.4(b)).

EO S-13-08. EO S-13-08 (November 2008) is intended to hasten California's response to the impacts of global climate change, particularly sea-level rise. Therefore, the EO directs state agencies to take specified actions to assess and plan for such impacts. The final 2009 California Climate Adaptation Strategy report was issued in December 2009 (CNRA 2009b), and an update, Safeguarding California: Reducing Climate Risk, followed in July 2014 (CNRA 2014). To assess the state's vulnerability, the report summarizes key climate change impacts to the state for the following areas: Agriculture, Biodiversity and Habitat, Emergency Management, Energy, Forestry, Ocean and Coastal Ecosystems and Resources, Public Health, Transportation, and Water. Issuance of the Safeguarding California: Implementation Action Plans followed in March 2016 (CNRA 2016). In January 2018, the CNRA released the Safeguarding California Plan: 2018 Update, which communicates current and needed actions that state government should take to build climate change resiliency (CNRA 2018).

2015 State of the State Address. In January 2015, Governor Brown in his inaugural address and annual report to the Legislature established supplementary goals, which would further reduce GHG emissions over the next 15 years. These goals include an increase in California's renewable energy portfolio from 33% to 50%, a reduction in vehicle petroleum use for cars and trucks by up to 50%, measures to double the efficiency of existing buildings, and decreasing emissions associated with heating fuels.

2016 State of the State Address. In his January 2016 address, Governor Brown established a statewide goal to bring per capita GHG emission down to two tons per person, which reflects the goal of the Global Climate Leadership Memorandum of Understanding (Under 2 MOU) to limit global warming to less than two degrees Celsius by 2050. The Under 2 MOU agreement pursues emission reductions of 80% to 95% below 1990 levels by 2050 and/or reaching a per capita annual emissions goal of less than 2 metric tons by 2050. A total of 177 jurisdictions, including California, representing 37 countries and 6 continents, have signed or endorsed the Under 2 MOU (Under 2 2017).

3.2.3 Local Regulations

3.2.3.1 South Coast Air Quality Management District

Air districts typically act in an advisory capacity to local governments in establishing the framework for environmental review of air pollution impacts under CEQA. This may include recommendations regarding significance thresholds, analytical tools to estimate emissions and assess impacts, and mitigations for potentially significant impacts. Although air districts will also address some of these issues on a project-specific basis as responsible agencies, they may provide general guidance to local governments on these issues (SCAQMD 2008). As discussed in Section 3.4.1, Thresholds of Significance, SCAQMD has recommended numeric CEQA significance thresholds for GHG emissions for lead agencies to use in assessing GHG impacts of residential and commercial development projects; however, these thresholds were not adopted. See Section 2.2.3.1, South Coast Air Quality Management District, for additional discussion on SCAQMD.

3.2.3.2 Southern California Association of Governments

SB 375 requires MPOs to prepare an SCS in their RTP. The SCAG Regional Council adopted the 2012 RTP/SCS in April 2012 (SCAG 2012), and the 2016–2040 RTP/SCS (2016 RTP/SCS) was adopted in April 2016. Both the 2012 and 2016 RTP/SCSs establish a development pattern for the region that, when integrated with the transportation network and other policies and measures, would reduce GHG emissions from transportation (excluding goods movement). Specifically, the 2012 RTP/SCS links the goals of sustaining mobility with the goals of fostering economic development; enhancing the environment; reducing energy consumption; promoting transportation-friendly development patterns; and encouraging all residents affected by socioeconomic, geographic, and commercial limitations to be provided with fair access. The 2012 and 2016 RTP/SCSs do not require that local general plans, specific plans, or zoning be consistent with it but provide incentives for consistency for governments and developers. Because the current SCAQMD AQMP (2012 AQMP) is based on the SCAG 2012 RTP/SCS demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment by industry) developed by SCAG for their 2012–2035 RTP/SCS, the SCAG 2012 RTP/SCS is discussed in Section 3.4, Significance Criteria and Methodology. See Section 2.2.3.2, Southern California Association of Governments, for an additional discussion on SCAG.

3.2.3.3 South Bay Cities Council of Governments

The South Bay Cities Council of Governments (SBCCOG) is a joint powers authority of 16 cities and the County of Los Angeles that share the goal of maximizing the quality of life and productivity of the South Bay area. The SBCCOG has been working on climate action planning since 2008, employing a subregional approach to the management and coordination of climate action planning to assist its cities in complying with legislation such as AB 32 and SB 375. The SBCCOG completed the South Bay Sustainable Strategy to address land use and mobility in an area that is transit poor. While the SBCCOG does not intend to produce an SCS, it hopes to use its South Bay Sustainable Strategy as a guide to develop a scenario-planning model that will allow the SBCCOG to independently plan and evaluate its member cities' development scenarios. This approach will supplement the regional SCS with a concrete tool to demonstrate a strategy that best fits the conditions in the South Bay to SCAG, the Los Angeles County Metropolitan Transportation Authority, and the South Bay cities' planning staffs.

3.2.3.4 City of Torrance

The City's General Plan (2010) includes various goals and policies designed to reduce GHG emissions within the City. Policies addressing climate change are integrated throughout the City's General Plan. The primary avenues to address climate change in urban areas are by lowering transportation emissions and encouraging energy conservation and efficiency. In addition, cities should address the urban heat island effect resulting from land use patterns, and encourage recycling, which reduces the amount of trash sent to landfills, thereby lowering methane emissions. Recycling also reduces the amount of energy needed to produce products.

As discussed in the General Plan, climate change and GHG reduction policies are addressed in multiple chapters of the General Plan. Objective CR.14 and associated policies are presented below (City of Torrance 2010).

OBJECTIVE CR.14: To reduce the City's overall carbon footprint and counteract the effects of global warming through a reduction in the emissions of GHGs within Torrance.

- **Policy CR.14.1:** Support the CARB in its ongoing plans to implement AB 32, and fully follow any new AB 32-related regulations.
- **Policy CR.14.2:** Develop and implement GHG emissions reduction measures, including discrete, early-action GHG-reducing measures that are technologically feasible and cost-effective.
- **Policy CR.14.3:** Pursue actions recommended in the U.S. Mayors Climate Protection Agreement to meet AB 32 requirements.
- **Policy CR.14.4:** Act as a leader and example in sustainability and reduction in GHG emissions by conducting City business in the most GHG-sensitive way.

Many GHG emissions reduction strategies result in co-benefits with reducing criteria air pollutant emissions and vice versa. See Section 2.2.3.3, City of Torrance, for a discussion of the City's air quality policies.

In 2009, the Torrance City Council adopted a Water Conservation Ordinance (Ordinance 3717) to prohibit wasteful uses of water, place certain restrictions on water use, and encourage sustained conservation (City of Torrance 2009b). The Ordinance has four stages (Permanent Baseline Measured, Level 1, Level 2, and Level 3 Stages), which are enacted in response to the water supply conditions. On August 9, 2016, the City Council approved deactivation of Level 2 water requirements due to the improved water supplies.

The City, in coordination with SBCCOG, prepared the *City of Torrance Climate Action Plan* (City CAP) in order to reduce GHG emissions within the City (City of Torrance and SBCCOG 2017). The Torrance City Council adopted the City CAP on December 12, 2017. The City has established GHG reduction goals for year 2020 (15% below 2005 levels) and for year 2035 (49% below 2005 levels). The CAP includes a list of non-binding goals and strategies in the following five categories (City of Torrance and SBCCOG 2017):

- **Land Use and Transportation**: Facilitate pedestrian and neighborhood development and identify ways to reduce automobile emissions including supporting zero emission vehicle infrastructure, improving pedestrian and bicycle infrastructure, enhancing public transit service, and supporting reductions in single-occupancy vehicle use.
- **Energy Efficiency**: Emphasize energy efficiency retrofits for existing buildings, energy performance requirements for new construction, water efficient landscaping, financing programs that will allow home and business owners to obtain low-interest loans for implementing energy efficiency in their buildings.
- **Solid Waste**: Focus on increasing waste diversion and encouraging participation in recycling and composting throughout the community.
- **Urban Greening**: Create "carbon sinks" as they store GHG emissions that are otherwise emitted into the atmosphere as well as support health of the community.
- **Energy Generation and Storage**: Demonstrate the City's commitment to support the implementation of clean, renewable energy while decreasing dependence on traditional, GHG emitting power sources.

3.3 Greenhouse Gas Inventories and Climate Change Conditions

3.3.1 Sources of Greenhouse Gas Emissions

Per the EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2015* (2017), total United States GHG emissions were approximately 6,586.7 MMT CO_2e in 2015. The primary GHG emitted by human activities in the United States was CO_2, which represented approximately 82.2% of total GHG emissions (5,411.4 MMT CO_2e). The largest source of CO_2, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 93.3% of CO_2 emissions in 2015 (5,049.8 MMT CO_2e). Relative to 1990, gross U.S. GHG emissions in 2015 are higher by 3.5%; down from a high of 15.5% above 1990 levels in 2007. GHG emissions decreased from 2014 to 2015 by 2.3% (153.0 MMT CO_2e) and overall, net emissions in 2015 were 11.5% below 2005 levels (EPA 2017c).

According to California's 2000–2015 GHG emissions inventory (2017 edition), California emitted 440.36 MMT CO_2e in 2015, including emissions resulting from out-of-state electrical generation (CARB 2017c). 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 2015 are presented in Table 14.

Table 14
GHG Emissions Sources in California

Source Category	Annual GHG Emissions (MMT CO_2e)	Percent of Total[a]
Transportation	164.63	37%
Industrial[b]	91.71	21%
Electric power[c]	83.67	19%
Commercial and residential	37.92	9%
Agriculture	34.65	8%
High global-warming potential substances	19.05	4%
Recycling and waste	8.73	2%
Total	440.36	100%

Source: CARB 2017c.
Notes: GHG = greenhouse gas; MMT CO_2e = million metric tons of carbon dioxide equivalent per year.
Emissions reflect the 2015 California GHG inventory.
a Percentage of total has been rounded, and total may not sum due to rounding.
b The Aliso Canyon natural gas leak event released 1.96 MMT CO_2e of unanticipated emissions in 2015 and 0.52 MMT CO_2e in 2016. These leak emissions will be fully mitigated according to legal settlement and are tracked separately from routine inventory emissions.
c Includes emissions associated with imported electricity, which account for 33.74 MMT CO_2e annually.

During the 2000 to 2015 period, per capita GHG emissions in California have continued to drop from a peak in 2001 of 14.0 MT per person to 11.3 MT per person in 2015, representing a 19%

decrease. In addition, total GHG emissions in 2015 were approximately 1.5 MMT CO_2e less than 2014 emissions. The declining trend in GHG emissions, coupled with programs that will continue to provide additional GHG reductions going forward, demonstrates that California is on track to meet the 2020 target of 431 MMT CO_2e (CARB 2017c).

3.3.2 Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through uncertain impacts related to future air temperatures and precipitation patterns. The 2014 *Intergovernmental Panel on Climate Change Synthesis Report* (IPCC 2014) indicated that warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. Signs that global climate change has occurred include warming of the atmosphere and ocean, diminished amounts of snow and ice, and rising sea levels (IPCC 2014).

In California, climate change impacts have the potential to affect sea-level rise, agriculture, snowpack and water supply, forestry, wildfire risk, public health, and electricity demand and supply (CCCC 2006). The primary effect of global climate change has been a 0.2°C rise in average global tropospheric temperature per decade, determined from meteorological measurements worldwide between 1990 and 2005. Scientific modeling predicts that continued emissions of GHGs at or above current rates would induce more extreme climate changes during the twenty-first century than were observed during the twentieth century. A warming of about 0.2°C (0.36°F) per decade is projected, and there are identifiable signs that global warming could be taking place.

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. A scientific consensus confirms that climate change is already affecting California. The average temperatures in California have increased, leading to more extreme hot days and fewer cold nights. Shifts in the water cycle have been observed, with less winter precipitation falling as snow, and both snowmelt and rainwater running off earlier in the year. Sea levels have risen, and wildland fires are becoming more frequent and intense due to dry seasons that start earlier and end later (CAT 2010).

An increase in annual average temperature is a reasonably foreseeable effect of climate change. Observed changes over the last several decades across the western United States reveal clear signals of climate change. Statewide average temperatures increased by about 1.7°F from 1895 to 2011, and warming has been greatest in the Sierra Nevada (CCCC 2012). By 2050, California is projected to warm by approximately 2.7°F above 2000 averages, a threefold increase in the rate of warming over the last century. By 2100, average temperatures could increase by 4.1°F to 8.6°F, depending on emissions levels. Springtime warming—a critical influence on snowmelt—will be particularly pronounced. Summer temperatures will rise more than winter temperatures, and the increases will be greater in inland California, compared to the coast. Heat waves will be more frequent, hotter, and longer. There will be fewer extremely cold nights (CCCC 2012). Experts predict a decline of 30% to 90% in Sierra Nevada snowpack, which accounts for approximately half of the surface water storage in California, over the next 100 years (CAT 2006).

Model projections for precipitation over California continue to show the Mediterranean pattern of wet winters and dry summers with seasonal, year-to-year, and decade-to-decade variability. For the first time, however, several of the improved climate models shift toward drier conditions by the mid-to-late twenty-first century in central, and most notably, Southern California. By the late century, all projections show drying, and half of them suggest 30-year average precipitation will decline by more than 10% below the historical average (CCCC 2012).

The following is a summary of current and future climate change impacts to resource areas in California, as discussed in *Safeguarding California: Reducing Climate Risk* (CNRA 2014).

Agriculture. Some of the specific challenges faced by the agricultural sector and farmers include more drastic and unpredictable precipitation and weather patterns; extreme weather events that range from severe flooding to extreme drought, to destructive storm events; significant shifts in water availably and water quality; changes in pollinator lifecycles; temperature fluctuations, including extreme heat stress and decreased chill hours; increased risks from invasive species and weeds, agricultural pests, and plant diseases; and disruptions to the transportation and energy infrastructure supporting agricultural production.

Biodiversity and Habitat. Specific climate change challenges to biodiversity and habitat include species migration in response to climatic changes, range shift, and novel combinations of species; pathogens, parasites, and disease; invasive species; extinction risks; changes in the timing of seasonal life-cycle events; food web disruptions; and threshold effects (i.e., a change in the ecosystem that results in a “tipping point” beyond which irreversible damage or loss has occurs).

Energy. Specific climate change challenges for the energy sector include temperature, fluctuating precipitation patterns, increasing extreme weather events, and sea level rise.

Forestry. The most significant climate change related risk to forests is accelerated risk of wildfire and more frequent and severe droughts. Droughts have resulted in more large-scale mortalities and, combined with increasing temperatures, have led to an overall increase in wildfire risks. Increased wildfire intensity subsequently increases public safety risks, property damage, fire suppression and emergency response costs, watershed and water quality impacts, and vegetation conversions.

Ocean and Coastal Ecosystems and Resources. Sea level rise, changing ocean conditions, and other climate change stressors are likely to exacerbate long-standing challenges related to ocean and coastal ecosystems in addition to threatening people and infrastructure located along the California coastline and in coastal communities. Sea level rise, in addition to more frequent and severe coastal storms and erosion, is threatening vital infrastructure such as roads, bridges, power plants, ports and airports, gasoline pipes, and emergency facilities, as well as negatively impacting the coastal recreational assets such as beaches and tidal wetlands.

Public Health. Climate change can impact public health through various environmental changes and is the largest threat to human health in the twenty-first century. Changes in precipitation patterns affect public health primarily through potential for altered water supplies, and extreme events such as heat, floods, droughts, and wildfires. Increased frequency, intensity, and duration of extreme heat and heat waves are likely to increase the risk of mortality due to heat-related illness as well as exacerbating existing chronic health conditions. Other extreme weather events are likely to negatively impact air quality and increase or intensify respiratory illnesses such as asthma and allergies.

Transportation. While the transportation industry is a source of GHG emissions, it is also vulnerable to climate change risks. Increasing temperatures and extended periods of extreme heat threaten the integrity of the roadways and rail lines. High temperatures cause the road surfaces to expand which leads to increased pressure and pavement buckling. High temperatures can also cause rail breakages, which could lead to train derailment. Other forms of extreme weather events, such as extreme storm events, can negatively impact infrastructure, which can impair movement of peoples and goods or potentially block evacuation routes and emergency access roads. Increased wildfires, flooding, erosion risks, landslides, mudslides, and rockslides can all profoundly impact the transportation system and pose a serious risk to public safety.

Water. Climate change could seriously impact the timing, form, and amount of precipitation; runoff patterns; and frequency and severity of precipitation events. Higher temperatures reduce the amount of snowpack and lead to earlier snowmelt, which can impact water supply availability, natural ecosystems, and winter recreation. Water supply availability during the intense dry summer months is heavily dependent on the snowpack accumulated during the wintertime. Increased risk of flooding can lead to a variety of public health concerns, including concerns related to water quality, public safety, property damage, displacement, and post-disaster mental health problems. Prolonged and intensified droughts can also negatively affect groundwater reserves and result in increased overdraft and subsidence. The higher risk of wildfires can lead to increased erosion, which can negatively impact watersheds and result in poor water quality.

In March 2016, CNRA released *Safeguarding California: Implementation Action Plans*, a document that shows how California is acting to convert the recommendations contained in the 2014 *Safeguarding California* plan into action (CNRA 2016). Additionally, in May 2017, CNRA released the draft *Safeguarding California Plan: 2017 Update*, which is a survey of current programmatic responses for climate change and contains recommendations for further actions (CNRA 2017).

In January 2018, CNRA released *Safeguarding California Plan: 2018 Update*, which provides a roadmap for state agencies to protect communities, infrastructure, services, and the natural environment from climate change impacts. The 2018 Safeguarding California Plan includes 69 recommendations across 11 sectors and more than 1,000 ongoing actions and next steps developed by scientific and policy experts across 38 state agencies (CNRA 2018). As with previous state adaptation plans, the 2018 Update addresses the following: acceleration of warming across the state, more intense and frequent heat waves, greater riverine flows, accelerating sea level rise, more intense and frequent drought, more severe and frequent wildfires, more severe storms and extreme weather events, shrinking snowpack and less overall precipitation, and ocean acidification, hypoxia, and warming.

3.4 Significance Criteria and Methodology

3.4.1 Thresholds of Significance

The significance criteria used to evaluate the project's GHG emissions impacts are based on the recommendations provided in Appendix G of the CEQA Guidelines. For the purposes of this GHG emissions analysis, the project would have a significant environmental impact if it would (14 CCR 15000 et seq.):

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

Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of GHGs. There are currently no established thresholds for assessing whether the GHG emissions of a project, such as the proposed project, would be considered a cumulatively considerable contribution to global climate change; however, all reasonable efforts should be made to minimize a project's contribution to global climate change. In addition, while GHG impacts are recognized exclusively as cumulative impacts (CAPCOA 2008), GHG emissions impacts must also be evaluated at a project level under CEQA.

The CEQA Guidelines do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Guidelines emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA (CNRA 2009a). The State of California has not adopted emission-based thresholds for GHG emissions under CEQA. The Governor's Office of Planning and Research's Technical Advisory titled "CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act Review" states that "public agencies are encouraged but not required to adopt thresholds of significance for environmental impacts. Even in the absence of clearly defined thresholds for GHG emissions, the law requires that such emissions from CEQA projects must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact" (OPR 2008). Furthermore, the advisory document indicates that "in the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a 'significant impact,' individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice." Section 15064.7(c) of the CEQA Guidelines specifies that "when adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence."

As described in Section 3.2.3, Local Regulations, the City has adopted a CAP to reduce GHG emissions within the City. However, as described below, it is not a qualified CAP that can be used to tier from for CEQA purposes (City of Torrance and SBCCOG 2017):

> Within the CEQA process, a qualified CAP framework offers the ability to streamline future CEQA greenhouse gas analyses by being able to tier off the climate action plan. Depending on local factors, such as anticipated levels of development, a qualified CAP is not necessary and agencies would continue to utilize the framework for informing the selection and evaluation of climate planning strategies within the local context. The South Bay Cities Council of Governments CAP framework is unqualified, and offers cities a planning tool with optional strategies. The analysis and optional strategies in the CAP can be used in the future, by way of example, to help create a Qualified Climate Reduction Strategy under CEQA, to create GHG thresholds to be used in CEQA analysis and can be used to update the City's General Plan.

Thus, the City CAP cannot be used to tier from for this analysis. As such, to address Threshold GHG-1, this analysis assesses compliance with applicable laws and regulations, as well as uses the

SCAQMD recommended (not adopted) numeric CEQA significance thresholds for GHG emissions for lead agencies to use in assessing GHG impacts of residential and commercial development projects.

In October 2008, the SCAQMD proposed recommended numeric CEQA significance thresholds for GHG emissions for lead agencies to use in assessing GHG impacts of residential and commercial development projects as presented in its *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold* (SCAQMD 2008). This guidance document, which builds on the previous guidance prepared by the California Air Pollution Control Officers Association, explored various approaches for establishing a significance threshold for GHG emissions. The draft interim CEQA thresholds guidance document was not adopted or approved by the Governing Board. However, in December 2008, the SCAQMD adopted an interim 10,000 MT CO_2e per-year screening level threshold for stationary source/industrial projects for which the SCAQMD is the lead agency (see SCAQMD Resolution No. 08-35, December 5, 2008).

The SCAQMD formed a GHG CEQA Significance Threshold Working Group to work with SCAQMD staff on developing GHG CEQA significance thresholds until statewide significance thresholds or guidelines are established. From December 2008 to September 2010, the SCAQMD hosted working group meetings and revised the draft threshold proposal several times, although it did not officially provide these proposals in a subsequent document. The SCAQMD has continued to consider adoption of significance thresholds for residential and general land use development projects. The most recent proposal, issued in September 2010, uses the following tiered approach to evaluate potential GHG impacts from various uses (SCAQMD 2010):

Tier 1 Determine if CEQA categorical exemptions are applicable. If not, move to Tier 2.

Tier 2 Consider whether or not the proposed project is consistent with a locally adopted GHG reduction plan that has gone through public hearing and CEQA review, that has an approved inventory, includes monitoring, etc. If not, move to Tier 3.

Tier 3 Consider whether the project generates GHG emissions in excess of screening thresholds for individual land uses. The 10,000 MT CO_2e per year threshold for industrial uses would be recommended for use by all lead agencies. Under option 1, separate screening thresholds are proposed for residential projects (3,500 MT CO_2e per year), commercial projects (1,400 MT CO_2e per year), and mixed-use projects (3,000 MT CO_2e per year). Under option 2, a single numerical screening threshold of 3,000 MT CO_2e per year would be used for all non-industrial projects. If the project generates emissions in excess of the applicable screening threshold, move to Tier 4.

Tier 4 Consider whether the project generates GHG emissions in excess of applicable performance standards for the project service population (population plus employment). The efficiency targets were established based on the goal of AB 32 to reduce statewide GHG emissions to 1990 levels by 2020. The 2020 efficiency targets are 4.8 MT CO_2e per service population for project level analyses and 6.6 MT CO_2e per service population for plan level analyses. If the project generates emissions in excess of the applicable efficiency targets, move to Tier 5.

Tier 5 Consider the implementation of CEQA mitigation (including the purchase of GHG offsets) to reduce the project efficiency target to Tier 4 levels.

This analysis applies the SCAQMD screening threshold of 3,000 MT CO_2e per year for all non-industrial projects. Per the SCAQMD guidance, construction emissions should be amortized over the operational life of the project, which is assumed to be 30 years (SCAQMD 2008). This impact analysis, therefore, adds amortized construction emissions to the estimated annual operational emissions and then compares operational emissions to the proposed SCAQMD threshold of 3,000 MT CO_2e per year.

3.4.2 Approach and Methodology

3.4.2.1 Construction Emissions

CalEEMod Version 2016.3.2 was used to estimate potential project-generated GHG emissions during construction. Construction of the project would result in GHG emissions primarily associated with use of off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. All details for construction criteria air pollutants discussed in Section 2.4.2.1, Construction Emissions, are also applicable for the estimation of construction-related GHG emissions. As such, see Section 2.4.2.1 for a discussion of construction emissions calculation methodology and assumptions.

3.4.2.2 Operational Emissions

CalEEMod Version 2016.3.2 was used to estimate potential project-generated operational GHG emissions from area sources (landscape maintenance), energy sources (natural gas and electricity), mobile sources, solid waste, and water supply and wastewater treatment. Emissions from each category are discussed in the following text with respect to the project. For additional details, see Section 2.4.2.2, Operational Emissions, for a discussion of operational emission calculation methodology and assumptions, specifically for area, energy (natural gas), and mobile sources. Operational year 2019 was assumed, consistent with the project's TIS.

Area Sources

CalEEMod was used to estimate GHG emissions from the project's area sources, which include operation of gasoline-powered landscape maintenance equipment, which produce minimal GHG emissions. See Section 2.4.2.2 for a discussion of landscaping equipment emissions calculations. Consumer product use and architectural coatings result in VOC emissions, which are analyzed in air quality analysis only, and little to no GHG emissions.

Energy Sources

The estimation of operational energy emissions was based on CalEEMod land use defaults and units or total area (i.e., square footage) of the project's land uses. The energy use from residential land uses is calculated in CalEEMod based on the Residential Appliance Saturation Study. For nonresidential buildings, CalEEMod energy intensity value (electricity or natural gas usage per square foot per year) assumptions were based on the California Commercial End-Use Survey database. Emissions are calculated by multiplying the energy use by the utility carbon intensity (pounds of GHGs per kilowatt-hour for electricity or 1,000 British thermal units for natural gas) for CO_2 and other GHGs. Annual natural gas (non-hearth) and electricity emissions were estimated in CalEEMod using the emissions factors for Southern California Edison (SCE), which would be the energy provider for the project.

Per the 2016 CALGreen Tier 1 standards (24 CCR, Part 11), which would be required by the City, the project would be required to demonstrate that buildings exceed Title 24, Part 6, of the California Code of Regulations energy efficiency standards by 15%. This requirement was accounted for in CalEEMod. Additionally, based on the project applicant's commitment to provide Energy Star-rated appliances for each residential unit, it was assumed that the project would provide energy-efficient clothes washers, dishwashers, fans, and refrigerators. In addition, it was assumed that high-efficiency lighting would be incorporated in the parking garage and all common areas. In addition to installing LED lighting in all common areas, non-security or wayfinding lighting would include motion sensors to ensure that energy used for lighting is only used when needed. A 40% lighting energy reduction associated with high-efficiency lighting was assumed in CalEEMod.[15]

CalEEMod default energy intensity factors (CO_2, CH_4, and N_2O mass emissions per kilowatt-hour) for SCE is based on the value for SCE's energy mix in 2012. As explained in Section 3.2.2, State Regulations, SB X1 2 established a target of 33% from renewable energy sources

[15] Per the CAPCOA *Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures* (CAPCOA 2010), LE-1 (Install Higher Efficacy Public Street and Area Lighting is applicable to public street and area outdoor lighting, which includes streetlights, pedestrian pathway lights, area lighting for parks and parking lots, and outdoor lighting around public buildings.

for all electricity providers in California by 2020 and SB 350 calls for further development of renewable energy, with a target of 50% by 2030. The CO_2 emissions intensity factor for utility energy use in CalEEMod was adjusted consistent with SCE's 2016 Power Content Label, which reported that 28% of the power mix was generated by eligible renewable sources (SCE 2017). Because SCE is striving to meet the 33% RPS by December 31, 2020, the CO_2 emissions intensity factor is anticipated to be less than assumed in CalEEMod at project operation (2019), which would reflect the increase in percentage of renewable energy in SCE's energy portfolio.

Mobile Sources

All details for criteria air pollutants discussed in Section 2.4.2.2 are also applicable for the estimation of operational mobile source GHG emissions. Project site location and neighborhood enhancements that would reduce VMT and associated GHG emissions include proximity to job centers, increase in density compared to average residential development density, improvements for the pedestrian network, and provision of traffic calming measures at intersections and streets.

Regulatory measures related to mobile sources include AB 1493 (Pavley) and related federal standards. AB 1493 required that CARB establish GHG emission standards for automobiles, light-duty trucks, and other vehicles determined by CARB to be vehicles that are primarily used for noncommercial personal transportation in the state. In addition, NHTSA and EPA have established corporate fuel economy standards and GHG emission standards, respectively, for automobiles and light-, medium-, and heavy-duty vehicles. Implementation of these standards and fleet turnover (replacement of older vehicles with newer ones) will gradually reduce emissions from the project's motor vehicles. The effectiveness of fuel economy improvements was evaluated by using the CalEEMod emission factors for motor vehicles in 2019 to the extent it was captured in EMFAC 2014.

Notably, the project would comply with the 2016 CALGreen Tier 1 standards for residential development, which requires that 5% of the total number of parking spaces provided for all types of parking facilities be electric vehicle charging spaces capable of supporting future electric vehicle supply equipment. As such, GHG emission reductions were quantified for the inclusion of 25 (i.e., 5% of 484 parking spaces) electric vehicle charging spaces for the project.[16]

The LCFS calls for a 10% reduction in the "carbon intensity" of motor vehicle fuels by 2020, which would further reduce GHG emissions. However, the carbon intensity reduction associated

[16] Methodology based on *Electric Vehicle Charging Stations as CEQA Mitigation: Greenhouse Gas Reductions and Cost Effectiveness* (County of Santa Clara 2018).

with the LCFS was not assumed in EMFAC 2014 and thus was not included in CalEEMod Version 2016.3.2 or the calculations below, which are therefore considered conservative.

Solid Waste

The project would generate solid waste, and therefore, result in CO_2e emissions associated with landfill off-gassing. CalEEMod default values for solid waste generation were used to estimate GHG emissions associated with solid waste. Per AB 341 (requiring mandatory commercial recycling beginning July 1, 2012), multifamily dwellings of five units or more must recycle; the Torrance Municipal Code includes three and four units in these recycling requirements as well (43.6.7 Equal Access Provision; City of Torrance 2017b). For multifamily homes without City services, private haulers providing collection services in the City are required to offer recycling services (City of Torrance 2017c). While AB 341 aims for a statewide 75% diversion rate by 2020, project compliance with the 50% diversion rate, consistent with the solid waste diversion requirements of AB 939, Integrated Waste Management Act, has been included in the GHG assessment. This assumption aligns with the City of Torrance Municipal Code (43.7.1 Waste Diversion, Recycling, and Graffiti; City of Torrance 2017b), which requires waste haulers to comply with the waste diversion schedule included in AB 939. In order to achieve the solid waste reduction requirement, the proposed project would include separate stream recycling on site for the whole property, with locations across the site for recycling bins and separate trash and recycling shoots. Additionally, the proposed project would contract all green waste to be managed by landscape companies.

Water and Wastewater

Supply, conveyance, treatment, and distribution of water for the project require the use of electricity, which would result in associated indirect GHG emissions. Similarly, wastewater generated by the project requires the use of electricity for conveyance and treatment, along with GHG emissions generated during wastewater treatment. The water consumption estimate for indoor water use is based on the project's Hydraulic Network Analysis for Fire and Domestic Water Service (KHR Associates 2018b), which estimates total domestic water usage from the project to be 88,084 gallons per day. The outdoor water use and electricity consumption from water use and wastewater generation were estimated using CalEEMod default values.

In regards to indoor water use, the project would install low-flow bathroom and kitchen faucets, low-flow toilets, and low-flow showers. According to the California Air Pollution Control Officers Association's *Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures* for WUW-1 (Water Use), incorporation of low-flow/high-efficiency fixtures in residential developments would result in the following reduction in GHG emissions (based on equivalent reduction in water, since GHG emissions from this source are directly proportional to water demand): 6.6% from toilets, 4.4% from showerheads, 5.7% from bathroom faucets, and 3.3% from kitchen faucets (CAPCOA 2010). This equates to a 20% reduction in indoor water use, which was included in the emissions estimate for the project. These reductions are based on flow-rates specified in the 2016 CALGreen residential mandatory standards that would apply to the project. In regards to outdoor water, the project would install water-efficient devices and landscaping in accordance with applicable ordinances, including use of drought-tolerant species appropriate to the climate and region. The project has committed to not include turf, which would reduce water use associated with landscaping. In addition, the project would be required to comply with EO B-29-15, which calls for a 25% reduction in total water use below 2013 levels, and the Water Conservation Ordinance (Ordinance 3717) (City of Torrance 2009b), which would reduce indoor and outdoor water use and associated GHG emissions. However, as a conservative assumption, no reduction in outdoor water use was assumed for the project.

3.5 Impact Analysis

3.5.1 Threshold GHG-1

Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

SCAQMD Proposed Quantitative Thresholds

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* (2008) 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 for comparison with the GHG significance threshold of 3,000 MT CO_2e per year. Therefore, the determination of significance is addressed in the operational emissions discussion following the estimated construction emissions.

CalEEMod was used to calculate the annual GHG emissions based on the construction scenario described in Section 2.4.2.1. Construction of the project is anticipated last a total of approximately 29 months. On-site sources of GHG emissions include off-road equipment and off-site sources including vendor trucks and worker vehicles. Table 15 presents construction emissions for the project from on-site and off-site emission sources.

Table 15
Estimated Annual Construction GHG Emissions

Year	CO_2	CH_4	N_2O	CO_2e
	Metric Tons per Year			
Year 1	914.45	0.09	0.00	916.79
Year 2	446.91	0.04	0.00	448.03
Year 3	217.99	0.02	0.00	218.49
Total	1,579.35	0.15	0.00	1,583.31

Notes: GHG = greenhouse gas; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent.
See Appendix A for complete results.

As shown in Table 15, the estimated total GHG emissions during construction of would be approximately 917 MT CO_2e in the first year of construction, 448 MT CO_2e in the second year of construction, and 219 MT CO_2e in the third year of construction, for a total of 1,583 MT CO_2e over the construction period. Estimated project-generated construction emissions amortized over 30 years would be approximately 52.78 MT CO_2e per year. As with project-generated construction criteria air pollutant emissions, GHG emissions generated during construction of the project would be short term in nature, lasting only for the duration of the construction period, and would not represent a long-term source of GHG emissions. Because there is no separate GHG threshold for construction, the evaluation of significance is discussed in the operational emissions analysis in the following text.

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); solid waste disposal; and generation of electricity associated with water supply, treatment, and distribution and wastewater treatment. CalEEMod was used to calculate the annual GHG emissions based on the operational assumptions described in Section 3.4.2.2, Operational Emissions.

The estimated operational (year 2019) project-generated GHG emissions from area sources, energy usage, motor vehicles, solid waste generation, and water usage and wastewater generation are shown in Table 16.

Table 16
Estimated Annual Operational GHG Emissions

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Metric Tons per Year			
Area	4.19	0.01	0.00	4.29
Energy	650.57	0.03	0.01	653.43
Mobile	2,167.12	0.13	0.00	2,170.36
Solid waste	15.90	0.94	0.00	39.39
Water supply and wastewater	138.56	0.04	0.02	145.75
Total	2,976.35	1.14	0.03	3,013.23
GHG reduction from 25 electric vehicle charging spaces				*(83.53)*
Amortized construction emissions				*52.78*
Total operational + amortized construction GHGs				2,982.48

Notes: GHG = greenhouse gas; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent.
See Appendix A for complete results.
These emissions reflect CalEEMod "mitigated" output and operational year 2019.
Totals may not sum due to rounding.

As shown in Table 16, estimated annual project-generated GHG emissions would be approximately 3,013 MT CO_2e per year as a result of project operations only. After accounting for GHG reductions from inclusion of 25 electric vehicle charging spaces and summing the amortized project construction emissions, total GHGs generated by the project would be approximately 2,983 MT CO_2e per year. As such, annual operational GHG emissions with amortized construction emissions would not exceed the SCAQMD threshold of 3,000 MT CO_2e per year. Therefore, the project's GHG contribution would not be cumulatively considerable and is less than significant.

Compliance with Applicable Laws and Regulations

Table 17 identifies laws and regulations currently in effect that reduce project-related GHG emissions. Because GHG laws and regulations continue to expand under California's climate leadership efforts, including most recently the enactment of SB 100 (2018), Table 17 presents a snapshot of these GHG laws and regulations. Since additional GHG laws and regulations are likely to apply, and listed laws and regulations are likely to continue to evolve, the scope of GHG laws and regulations applicable to GHG-emissions related to the project is anticipated to expand over time and result in lower-than-predicted GHG emissions.

Table 17
Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
Building Components/Facility Operations		
Roofs/Ceilings/Insulation	CALGreen Code (Title 24, Part 11) California Energy Code (Title 24, Part 6)	The project must comply with efficiency standards regarding roofing, ceilings, and insulation. For example: <u>Roofs/Ceilings</u>: New construction must reduce roof heat island effects per CALGreen Code Section 106.11.2, which requires use of roofing materials having a minimum aged solar reflectance, thermal emittance complying with Section A5.106.11.2.2 and A5.106.11.2.3 or a minimum aged Solar Reflectance Index as specified in Tables A5.106.11.2.2, or A5.106.11.2.3. Roofing materials must also meet solar reflectance and thermal emittance standards contained in Title 20 Standards. <u>Roof/Ceiling Insulation</u>: There are also requirements for the installation of roofing and ceiling insulation. (See Title 24, Part 6 Compliance Manual at Section 3.2.2.)
Flooring	CALGreen Code	The project must comply with efficiency standards regarding flooring materials. For example, for 80% of floor area receiving “resilient flooring,” the flooring must meet applicable installation and material requirements contained in CALGreen Code Section 5.504.4.6.
Window and Doors (Fenestration)	California Energy Code	The project must comply with fenestration efficiency requirements. For example, the choice of windows, glazed doors, and any skylights for the project must conform to energy consumption requirements affecting size, orientation, and types of fenestration products used. (See Title 24, Part 6 Compliance Manual, Section 3.3.)
Building Walls/Insulation	CALGreen Code California Energy Code	The project must comply with efficiency requirements for building walls and insulation. <u>Exterior Walls</u>: Must meet requirements in current edition of California Energy Code, and comply with Sections A5.106.7.1 or A5.106.7.2 of CALGreen Code for wall surfaces, as well as Section 5.407.1, which required weather-resistant exterior wall and foundation envelope as required by California Building Code Section 1403.2. Construction must also meet requirements contained in Title 24, Part 6, which vary by material of the exterior walls. (See Title 24, Part 6 Compliance Manual, Part 3.2.3.) <u>Demising (Interior) Walls</u>: Mandatory insulation requirements for demising walls (which separate conditioned from non-conditions space) differ by the type of wall material used. (*Id*. at 3.2.4.) <u>Door Insulation</u>: There are mandatory requirements for air infiltration rates to improve insulation efficiency; they differ according to the type of door. (*Id*. at 3.2.5.)

Table 17
Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		Flooring Insulation: There are mandatory requirements for insulation that depend on the material and location of the flooring. (*Id*. at 3.2.6.)
Finish Materials	CALGreen Code	The project must comply with pollutant control requirements for finish materials. For example, materials including adhesives, sealants, caulks, paints and coatings, carpet systems, and composite wood products must meet requirements in CALGreen Code to ensure pollutant control. (CALGreen Code Section 5.504.4.)
Wet Appliances (Toilets/Faucets/Urinals, Dishwasher/Clothes Washer, Spa and Pool/Water Heater)	CALGreen Code California Energy Code Appliance Efficiency Regulations (Title 20 Standards)	Wet appliances associated with the project must meet various efficiency requirements. For example: Spa and Pool: Use associated with the project is subject to appliance efficiency requirements for service water heating systems and equipment, spa and pool heating systems and equipment. (Title 24, Part 6, Sections 110.3, 110.4, 110.5; Title 20 Standards, Sections 1605.1(g), 1605.3(g); see also California Energy Code.) Toilets/Faucets/Urinals: Use associated with the project is subject to new maximum rates for toilets, urinals, and faucets effective January 1, 2016: • Showerheads maximum flow rate 2.5 gpm at 80 psi • Wash fountains 2.2 x (rim space in inches/20) gpm at 60 psi • Metering faucets 0.25 gallons/cycle • Lavatory faucets and aerators 1.2 gpm at 60 psi • Kitchen faucets and aerators 1.8 gpm with optional temporary flow of 2.2 gpm at 60 psi • Public lavatory faucets 0.5 gpm at 60 psi • Trough-type urinals 16 inches length • Wall mounted urinals 0.125 gallons per flush • Other urinals 0.5 gallons per flush (Title 20 Standards, Sections 1605.1(h),(i) 1065.3(h),(i).) Water Heaters: Use associated with the project is subject to appliance efficiency requirements for water heaters. (Title 20 Standards, Sections 1605.1(f), 1605.3(f).) Dishwasher/Clothes Washer: Use associated with the project is subject to appliance efficiency requirements for dishwashers and clothes washers. (Title 20 Standards, Sections 1605.1(o),(p),(q), 1605.3(o),(p),(q).)
Dry Appliances (Refrigerator/Freezer, Heater/Air Conditioner, Clothes Dryer)	Title 20 Standards CALGreen Code	Dry appliances associated with the project must meet various efficiency requirements. For example: Refrigerator/Freezer: Use associated with the project is subject to appliance efficiency requirements for refrigerators and freezers. (Title 20 Standards, Sections 1605.1(a), 1605.3(a).)

Table 17
Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		Heater/Air Conditioner: Use associated with the project is subject to appliance efficiency requirements for heaters and air conditioners. (Title 20 Standards, Sections 1605.1(b),(c),(d),(e), 1605.3(b),(c),(d),(e) as applicable.) Clothes Dryer: Use associated with the project is subject to appliance efficiency requirements for clothes dryers. (Title 20 Standards, Section 1605.1(q).)
	CALGreen Code	Installations of HVAC, refrigeration and fire suppression equipment must comply with CALGreen Code Sections 5.508.1.1 and 508.1.2, which prohibits CFCs, halons, and certain HCFCs and HFCs.
Lighting	Title 20 Standards	Lighting associated with the project will be subject to energy efficiency requirements contained in Title 20 Standards. General Lighting: Indoor and outdoor lighting associated with the project must comply with applicable appliance efficiency regulations (Title 20 Standards, Sections 1605.1(j),(k),(n), 1605.3(j),(k),(n).) Emergency lighting and self-contained lighting: the project must also comply with applicable appliance efficiency regulations (Title 20 Standards, Sections 1605.1(l), 1605.3(l).) Traffic Signal Lighting: For any necessary project improvements involving traffic lighting, traffic signal modules and traffic signal lamps will need to comply with applicable appliance efficiency regulations (Title 20 Standards, Sections 1605.1(m), 1605.3(m).)
	California Energy Code	Lighting associated with the project will also be subject to energy efficiency requirements contained in Title 24, Part 6, which contains energy standards for non-residential indoor lighting and outdoor lighting. (See Title 24 Part 6 Compliance Manual, at Sections 5, 6.) Mandatory lighting controls for indoor lighting include, for example, regulations for automatic shut-off, automatic daytime controls, demand responsive controls, and certificates of installation. (Id. at Section 5.) Regulations for outdoor lighting include, for example, creation of lighting zones, lighting power requirements, a hardscape lighting power allowance, requirements for outdoor incandescent and luminaire lighting, and lighting control functionality. (Id. at Section 6.)
	AB 1109	Lighting associated with the project will be subject to energy efficiency requirements adopted pursuant to AB 1109. Enacted in 2007, AB 1109 required the CEC to adopt minimum energy efficiency standards for general purpose

Table 17
Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		lighting, to reduce electricity consumption 50% for indoor residential lighting and 25% for indoor commercial lighting.
Bicycle and Vehicle Parking	CALGreen Code	The project will be required to provide compliant bicycle parking, fuel-efficient vehicle parking, and electric vehicle charging spaces (CALGreen Code Sections 5.106.4, 5.106.5.1, 5.106.5.3)
	California Energy Code	The project is also subject to parking requirements contained in Title 24, Party 6. For example, parking capacity is to meet but not exceed minimum local zoning requirements, and the project should employ approved strategies to reduce parking capacity (Title 24, Part 6, section 106.6)
Landscaping	CALGreen Code	The CALGreen Code requires and has further voluntary provisions for: - A water budget for landscape irrigation use; - For new water service, separate meters or submeters must be installed for indoor and outdoor potable water use for landscaped areas of 1,000-5,000 square feet; - Provide water-efficient landscape design that reduces use of potable water beyond initial requirements for plant installation and establishment
	EO B-29-15	The project is also subject to emissions reduction requirements to be achieved by implementation of EO B-29-15. This emergency executive order directs the Department of Water Resources to lead a statewide initiative to replace 50 million square feet of lawns and ornamental turf with drought tolerant landscapes. The order also directed the departments to update the Model Water Efficient Landscaping Ordinance, which they did in 2015.
	Model Water Efficient Landscaping Ordinance	The model ordinance promotes efficient landscaping in new developments and establishes an outdoor water budget for new and renovated landscaped areas that are 500 square feet or larger. (CCR, Title 23, Division 2, Chapter 2.7.)
	Cap-and-Trade Program	Transportation fuels used in landscape maintenance equipment (e.g., gasoline) would be subject to the Cap-and-Trade Program. (See “Energy Use,” below.)
Refrigerants	CARB Management of High GWP Refrigerants for Stationary Sources	Any refrigerants associated with the project will be subject to CARB standards. CARB’s Regulation for the Management of High GWP Refrigerants for Stationary Sources 1) reduces emissions of high-GWP refrigerants from leaky stationary, non-residential refrigeration equipment; 2) reduces emissions resulting from the

Table 17
Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		installation and servicing of stationary refrigeration and air conditioning appliances using high-GWP refrigerants; and 3) requires verification GHG emission reductions. (CCR, Title 17, Division 3, Chapter 1, Subchapter 10, Article 4, Subarticle 5.1, Section 95380 et seq.)
Consumer Products	CARB High GWP GHGs in Consumer Products	All consumer products associated with the project will be subject to CARB standards. CARB's consumer products regulations set VOC limits for numerous categories of consumer products, and limits the reactivity of the ingredients used in numerous categories of aerosol coating products (CCR, Title 17, Division 3, Chapter 1, Subchapter 8.5.)
Construction		
Use of Off-Road Diesel Engines, Vehicles, and Equipment	CARB In-Use Off-Road Diesel Vehicle Regulation	Any relevant vehicle or machine use associated with the project will be subject to CARB standards. The CARB In-Use-Off-Road Diesel Vehicle Regulation applies to certain off-road diesel engines, vehicles, or equipment greater than 25 horsepower. The regulation: 1) imposes limits on idling, requires a written idling policy, and requires a disclosure when selling vehicles; 2) requires all vehicles to be reported to CARB (using the Diesel Off-Road Online Reporting System) and labeled; 3) restricts the adding of older vehicles into fleets starting on January 1, 2014; and 4) requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits). The requirements and compliance dates of the Off-Road regulation vary by fleet size, as defined by the regulation.
	Cap-and-Trade Program	Transportation fuels (e.g., gasoline) used in equipment operation would be subject to the Cap-and-Trade Program. (See "Energy Use," below.)
Pollutant Control	CALGreen Code	If an HVAC system is used during construction, the project must use return air filters with a MERV of 8, based on ASHRAE 52.2-1999, or an average efficiency of 30% based on ASHRAE 5.2.1-1992. All filters must be replaced immediately prior to occupancy. (CALGreen Code Section A5.504.1.3.)
Greening New Construction	CALGreen Code	All new construction, including the project, must comply with CALGreen Code, as discussed in more detail throughout this table. Adoption of the mandatory CALGreen Code standards for construction has been essential for improving the overall environmental performance of new buildings; it also sets

Table 17
Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		voluntary targets for builders to exceed the mandatory requirements.
Construction Waste	CALGreen Code	The project will be subject to CALGreen Code requirements for construction waste reduction, disposal, and recycling, such as a requirement to recycle and/or salvage for reuse a minimum of 50% of the non-hazardous construction waste in accordance with Section 5.408.1.1, 5.408.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent.
Worker, vendor and truck vehicle trips (on-road vehicles)	Cap-and-Trade Program	Transportation fuels (e.g., gasoline) used in worker, vendor and truck vehicle trips would be subject to the Cap-and-Trade Program. (See “Energy Use,” below.)
Solid Waste		
Solid Waste Management	Landfill Methane Control Measure	Waste associated with the project will be disposed per state requirements for landfills, material recovery facilities, and transfer stations. Per the statewide GHG emissions inventory, the largest emissions from waste management sectors come from landfills, and are in the form of CH_4. In 2010, CARB adopted a regulation that reduces emissions from methane in landfills, primarily by requiring owners and operators of certain uncontrolled municipal solid waste landfills to install gas collection and control systems, and requires existing and newly installed gas and control systems to operate in an optimal manner. The regulation allows local air districts to voluntarily enter into a memorandum of understanding with CARB to implement and enforce the regulation and to assess fees to cover costs of implementation.
	Mandatory Commercial Recycling (AB 341)	AB 341 will require the project, if it generates four cubic yards or more of commercial solid waste per week, to arrange for recycling services, using one of the following: self-haul; subscribe to a hauler(s); arranging for pickup of recyclable materials; subscribing to a recycling service that may include mixed waste processing that yields diversion results comparable to source separation. The project will also be subject to local commercial solid waste recycling program required to be implemented by each jurisdiction under AB 341.
	CALGreen Code	The project will be subject to CALGreen Code requirement to provide areas that serve the entire building and are identified for the depositing, storage and collection of nonhazardous materials for recycling (CALGreen Code Section 5.410.1)
Energy Use		

Table 17
Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
Electricity/Natural Gas Generation	Cap-and-Trade Program	Electricity and natural gas usage associated with the project will be subject to the Cap-and-Trade Program. The rules came into effect on January 1, 2013, applying to large electric power plants and large industrial plants. In 2015, importers and distributors of fossil fuels were added to the Cap-and-Trade Program in the second phase. Specifically, on January 1, 2015, cap-and-trade compliance obligations were phased in for suppliers of natural gas, reformulated gasoline blendstock for oxygenate blending (RBOB), distillate fuel oils, and liquefied petroleum gas that meet or exceed specified emissions thresholds. The threshold that triggers a cap-and-trade compliance obligation for a fuel supplier is 25,000 metric tons or more of CO_2e annually from the GHG emissions that would result from full combustion or oxidation of quantities of fuels (including natural gas, RBOB, distillate fuel oil, liquefied petroleum gas, and blended fuels that contain these fuels) imported and/or delivered to California.
Renewable Energy	California RPS (SB X1-2, SB 350, and SB 100)	Energy providers associated with the project will be required to comply with RPS set by SB X1 2, SB 350, and SB 100. SB X1 2 requires investor-owned utilities, publicly-owned utilities, and electric service providers to increase purchases of renewable energy such that at least 33% of retail sales are procured from renewable energy resources by December 31, 2020. In the interim, each entity was required to procure an average of 20% of renewable energy for the period of January 1, 2011 through December 31, 2013; and will be required to procure an average of 25% by December 31, 2016, and 33% by 2020. SB 350 requires retail sellers and publicly owned utilities to procure 50% of their electricity from eligible renewable energy resources by 2030. SB 100 increased the standards set forth in SB 350 establishing that 44% of the total electricity sold to retail customers in California per year by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of the retail sales of electricity to California by 2045.
	Million Solar Roofs Program (SB 1)	The project will participate in California's energy market, which is affected by implementation of the Million Solar Roofs Program. As part of Governor Schwarzenegger's Million Solar Roofs Program, California has set a goal to install 3,000

Table 17
Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		megawatts of new, solar capacity through 2016. The Million Solar Roofs Program is a ratepayer-financed incentive program aimed at transforming the market for rooftop solar systems by driving down costs over time.
	California Solar Initiative-Thermal Program	The project will participate in California's energy market, which is affected by implementation of the California Solar Initiative -Thermal Program. The program offers cash rebates of up to $4,366 on solar water heating systems for single-family residential customers. Multifamily and Commercial properties qualify for rebates of up to $800,000 on solar water heating systems and eligible solar pool heating systems qualify for rebates of up to $500,000. Funding for the California Solar Initiative-Thermal program comes from ratepayers of Pacific Gas & Electric, SCE, Southern California Gas Company, and San Diego Gas & Electric. The rebate program is overseen by the CPUC as part of the California Solar Initiative.
	Waste Heat and Carbon Emissions Reduction Act (AB 1613, AB 2791)	The project will participate in California's energy market, which is affected by implementation of the Waste Heat and Carbon Emissions Reduction Act. Originally enacted in 2007 and amended in 2008, this act directed the CEC, CPUC, and CARB to implement a program that would encourage the development of new combined heat and power systems in California with a generating capacity of not more than 20 megawatts, to increase combined heat and power use by 30,000 gigawatt-hour. The CPUC publicly owned electric utilities, and CEC duly established policies and procedures for the purchase of electricity from eligible combined heat and power systems. CEC guidelines require combined heat and power systems to be designed to reduce waste energy; have a minimum efficiency of 60%; have NO_X emissions of no more than 0.07 pounds per megawatt-hour; be sized to meet eligible customer generation thermal load; operate continuously in a manner that meets expected thermal load and optimizes efficient use of waste heat; and be cost effective, technologically feasible, and environmentally beneficial.
Vehicular/Mobile Sources		
General	SB 375 and SCAG RTP/SCS	The project complies with, and is subject to, the SCAG adopted RTP/SCS, which CARB approved as meeting its regional GHG targets in 2016.
Fuel	Low Carbon Fuel Standard (LCFS)/ EO S-01-07	Auto trips associated with the project will be subject to LCFS (EO S-01-07), which requires a 10% or greater reduction in the average fuel carbon intensity by 2020 with a 2010 baseline for transportation fuels in California regulated

Table 17
Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		by CARB. The program establishes a strong framework to promote the low carbon fuel adoption necessary to achieve the Governor's 2030 and 2050 GHG goals.
	Cap-and-Trade Program	Use of gasoline associated with the project will be subject to the Cap-and-Trade Program. The rules came into effect on January 1, 2013, applying to large electric power plants and large industrial plants. In 2015, importers and distributors of fossil fuels were added to the Cap-and-Trade Program in the second phase. Specifically, on January 1, 2015, cap-and-trade compliance obligations were phased in for suppliers of natural gas, RBOB, distillate fuel oils, and liquefied petroleum gas that meet or exceed specified emissions thresholds. The threshold that triggers a cap-and-trade compliance obligation for a fuel supplier is 25,000 MT or more of CO_2e annually from the GHG emissions that would result from full combustion or oxidation of quantities of fuels (including natural gas, RBOB, distillate fuel oil, liquefied petroleum gas, and blended fuels that contain these fuels) imported and/or delivered to California.
Automotive Refrigerants	CARB Regulation for Small Containers of Automotive Refrigerant	Vehicles associated with the project will be subject to CARB's Regulation for Small Containers of Automotive Refrigerant. (CCR, Title 17, Division 3, Chapter 1, Subchapter 10, Article 4, Subarticle 5, Section 95360 et seq.) The regulation applies to the sale, use, and disposal of small containers of automotive refrigerant with a GWP greater than 150. The regulation achieves emission reductions through implementation of four requirements: 1) use of a self-sealing valve on the container, 2) improved labeling instructions, 3) a deposit and recycling program for small containers, and 4) an education program that emphasizes best practices for vehicle recharging. This regulation went into effect on January 1, 2010 with a one-year sell-through period for containers manufactured before January 1, 2010. The target recycle rate is initially set at 90%, and rises to 95% beginning January 1, 2012.
Light-Duty Vehicles	AB 1493 (or the Pavley Standard)	Cars that drive to and from the project will be subject to AB 1493, which directed CARB to adopt a regulation requiring the maximum feasible and cost effective reduction of GHG emissions from new passenger vehicles. Pursuant to AB 1493, CARB adopted regulations that establish a declining fleet average standard for CO_2, CH_4, N_2O, and HFCs (air conditioner refrigerants) in new passenger vehicles and light-duty trucks beginning with the 2009 model year and phased-in through the 2016 model

Table 17
Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		year. These standards are divided into those applicable to lighter and those applicable to heavier portions of the passenger vehicle fleet. The regulations will reduce “upstream” smog-forming emissions from refining, marketing, and distribution of fuel.
	Advanced Clean Car and ZEV Programs	Cars that drive to and from the project will be subject to the Advanced Clean Car and ZEV Programs. In January 2012, CARB approved a new emissions-control program for model years 2017 through 2025. The program combines the control of smog, soot and global warming gases and requirements for greater numbers of zero-emission vehicles into a single package of standards called Advanced Clean Cars. By 2025, new automobiles will emit 34% fewer global warming gases and 75% fewer smog-forming emissions. The ZEV program will act as the focused technology of the Advanced Clean Cars program by requiring manufacturers to produce increasing numbers of ZEVs and plug-in hybrid electric vehicles in the 2018-2025 model years.
	Tire Inflation Regulation	Cars that drive to and from the project will be subject to the CARB Tire Inflation Regulation, which took effect on September 1, 2010, and applies to vehicles with a gross vehicle weight rating of 10,000 pounds or less. Under this regulation, automotive service providers must, inter alia, check and inflate each vehicle’s tires to the recommended tire pressure rating, with air or nitrogen, as appropriate, at the time of performing any automotive maintenance or repair service, and to keep a copy of the service invoice for a minimum of three years, and make the vehicle service invoice available to the CARB, or its authorized representative upon request.
	EPA and NHTSA GHG and CAFE standards.	Mobile sources that travel to and from the project would be subject to EPA and NHTSA GHG and CAFE standards for passenger cars, light-duty trucks, and medium-duty passenger vehicles. (75 FR 25324–25728 and 77 FR 62624–63200.)
Medium- and Heavy-Duty Vehicles	CARB In-Use On-Road Heavy-Duty Diesel Vehicles Regulation (Truck and Bus Regulation)	Any heavy-duty trucks associated with the project will be subject to CARB standards. The regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Newer heavier trucks and buses must meet PM filter requirements. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent.

Table 17
Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
		The regulation applies to nearly all privately and federally owned diesel fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating greater than 14,000 pounds.
	CARB In-Use Off-Road Diesel Vehicle Regulation	Any relevant vehicle or machine use associated with the project will be subject to CARB standards. The CARB In-Use-Off-Road Diesel Vehicle Regulation applies to certain off-road diesel engines, vehicles, or equipment greater than 25 horsepower. The regulations: 1) imposes limits on idling, requires a written idling policy, and requires a disclosure when selling vehicles; 2) requires all vehicles to be reported to CARB (using the Diesel Off-Road Online Reporting System) and labeled; 3) restricts the adding of older vehicles into fleets starting on January 1, 2014; and 4) requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits). The requirements and compliance dates of the Off-Road regulation vary by fleet size, as defined by the regulation.
	Heavy-Duty Vehicle GHG Emission Reduction Regulation	Any relevant vehicle or machine use associated with the project will be subject to CARB standards. The CARB Heavy-Duty Vehicle GHG Emission Reduction Regulation applies to heavy-duty tractors that pull 53-foot or longer box-type trailers. (CCR, Title 17, Division 3, Chapter 1, Subchapter 10, Article 4, Subarticle 1, Section 95300 et seq.) Fuel efficiency is improved through improvements in tractor and trailer aerodynamics and the use of low rolling resistance tires.
	EPA and NHTSA GHG and CAFE standards.	Mobile sources that travel to and from the project would be subject to EPA and NHTSA GHG and CAFE standards for medium- and heavy-duty vehicles. (76 FR 57106–57513.)
	Water Use	
Water Use Efficiency	Emergency State Water Board Regulations	Water use associated with the project will be subject to emergency regulations. On May 18, 2016, partially in response to EO B-27-16, the State Water Board adopted emergency water use regulations (CCR, title 23, Section 864.5 and amended and re-adopted Sections 863, 864, 865, and 866). The regulation directs the State Water Board, Department of Water Resources, and CPUC to implement rates and pricing structures to incentivize water conservation, and calls upon water suppliers, homeowners' associations, California businesses, landlords and tenants, and wholesale water agencies to take stronger conservation measures.

Table 17
Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
	EO B-37-16	Water use associated with the project will be subject to Emergency EO B-37-16, issued May 9, 2016, which directs the State Water Resources Control Board to adjust emergency water conservation regulations through the end of January, 2017 to reflect differing water supply conditions across the state. The Water Board must also develop a proposal to achieve a mandatory reduction of potable urban water usage that builds off the mandatory 25% reduction called for in EO B-29-15. The Water Board and Department of Water Resources will develop new, permanent water use targets to which the project will be subject. The Water Board will permanently prohibit water-wasting practices such as hosing off sidewalks, driveways, and other hardscapes; washing automobiles with hoses not equipped with a shut-off nozzle; using non-recirculated water in a fountain or other decorative water feature; watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation; and irrigating ornamental turf on public street medians.
	EO B-40-17	EO B-40-17 lifted the drought emergency in all California counties except Fresno, Kings, Tulare, and Tuolumne. It also rescinds EO B-29-15, but expressly states that EO B-37-16 remains in effect and directs the State Water Resources Control Board to continue development of permanent prohibitions on wasteful water use to which the project will be subject.
	SB X7-7	Water provided to the project will be affected by SB X7-7's requirements for water suppliers. SB X7-7, or the Water Conservation Act of 2009, requires all water suppliers to increase water use efficiency. It also requires, among other things, that the Department of Water Resources, in consultation with other state agencies, develop a single standardized water use reporting form, which would be used by both urban and agricultural water agencies.
	CALGreen Code	The project is subject to CALGreen Code's water efficiency standards, including a required 20% mandatory reduction in indoor water use. (CALGreen Code, Division 4.3.)
	California Water Code, Division 6, Part 2.10, Sections 10910–10915.	Development and approval of the project requires the development of a project-specific Water Supply Assessment.
	Cap-and-Trade Program	Electricity usage associated with water and wastewater supply, treatment and distribution would be subject to the Cap-and-Trade Program.

Table 17
Greenhouse Gas-Related Laws and Regulations

Project Component	Applicable Laws/ Regulations	GHG Reduction Measures Required for Project
	California RPS (SB X1-2, SB 350, SB 100)	Electricity usage associated with water and wastewater supply, treatment and distribution associated with the project will be required to comply with RPS set by SB X1-2, SB 350, and SB 100.
Water Recycling	Water Reclamation Requirements for Recycled Water Use. State Water Resources Control Board Order WQ 2016-0068-DDW	These requirements replace 2014-0090-DWQ General Waste Discharge Requirements for Recycled Water Use, and establish standard conditions for recycled water use and conditionally delegates authority to an Administrator to manage a Water Recycling Program and issue Water Recycling Permits to recycled water users. Only treated municipal wastewater for non-potable uses can be permitted, such as landscape irrigation, crop irrigation, dust control, industrial/commercial cooling, decorative fountains, etc. Potable reuse is not covered.
	Regulations for Groundwater Replenishment Using Recycled Water	This emergency rulemaking by the California Department of Public Health (California Title of Regulations, Title 22, Sections 60301.050 et seq.), effective June 18, 2014, applied to Groundwater Replenishment Reuse projects utilizing surface application, which received initial permits from the Regional Board. The regulations address permitting and plan approval, sampling requirements, operation requirements, and ongoing reporting requirements.
	Policy for Water Quality Control for Recycled Water. State Water Resources Control Board Resolution No. 2009-0011, as amended by Resolution No. 2013-0003	The project would be subject to the State Water Resources Control Board statewide mandate to increase recycled water usage by 0.2 million acre-feet per year by 2020. However, recycled water is not currently available at the project site.

Notes: gpm = gallons per minute; psi = pounds per square inch; GHG = greenhouse gas; AB = Assembly Bill; SB = Senate Bill; EO = Executive Order; HVAC = heating, ventilation, and air conditioning; CFC = chlorofluorocarbons; HFCs = hydrofluorocarbons; HCFCs = hydrochlorofluorocarbons; CEC = California Energy Commission; CCR = California Code of Regulations; CARB = California Air Resources Board; GWP = global warming potential; VOC = volatile organic compounds; MERV = Minimum Efficiency Reporting Value; ASHRAE = American Society of Heating, Refrigerating and Air-Conditioning Engineers; CH_4 = methane; CO_2e = carbon dioxide equivalent; RBOB = reformulated blendstock for oxygenate blending; RPS = renewable portfolio standard; CPUC = California Public Utilities Commission; SCE = Southern California Edison; NO_x = oxides of nitrogen; SCAG = Southern California Association of Governments; RTP = regional transportation plan; SCS = sustainable communities strategy; LCFS = low carbon fuel standard; CO_2 = carbon dioxide; N_2O = nitrous oxide; ZEV = zero-emissions vehicle; EPA = Environmental Protection Agency; NHTSA = National Highway Traffic Safety Administration; CAFE = corporate average fuel economy; PM = particulate matter; FR = Federal Register.

As described above, the project's GHG emissions (both on and off-site) are regulated by many GHG reduction mandates. Compliance with these GHG reduction legal requirements is appropriately assumed to occur under CEQA (*Oakland Heritage Alliance v. City of Oakland* (2011) 195 Cal. App. 4th 884, 906; *Center for Biological Diversity v. Department of Fish & Wildlife* (2015) 234 Cal. App.

4th 214, 244-45). This supports the conclusion that the project's GHG contribution would not be cumulatively considerable and is less than significant.

3.5.2 Threshold GHG-2

Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Project Consistency with the City's CAP

The City, in coordination with SBCCOG, has developed a CAP to reduce GHG emissions within the City and thereby reduce the City's contribution to global climate change concerns. However, this CAP is not a Qualified GHG Emissions Reduction Plan under CEQA per the requirements outlined in the CEQA Guidelines, Section 15183.5(D); therefore, no CEQA document can tier from the City CAP. While there are no mandatory GHG plans, policies, or regulations or finalized agency guidelines that would apply to implementation of the project, a description of the relevant plans with GHG reduction strategies is provided below.

As discussed in Section 3.2.3, the City CAP includes GHG reduction strategies in the sectors of land use and transportation, energy efficiency, solid waste, urban greening, and energy generation and storage, to reach the City's GHG reduction targets (City of Torrance and SBCCOG 2017). The project would include many design features, detailed in Sections 2.4.2 and 3.4.2 (Approach and Methodology), which would result in reduced GHG emissions, consistent with the intent and strategies of the City CAP. Table 18 details the project's consistency with each of the City CAP GHG reduction measures.

Table 18
Project Consistency with City CAP GHG Emission Reduction Measures

City CAP Measure	Measure Number	Project Consistency
Land Use and Transportation (LUT)		
Goal LUT: A – Accelerate the Market for EV Vehicles		
EV Charging Policies	LUT: A1	Consistent. The EV charging station requirements of the CALGreen Tier 1 standards would be implemented into the project, including designating 25 spaces (i.e., 5%) of the total number of parking spaces as EV charging spaces capable of supporting future electric vehicle supply equipment (EVSE).
Administrative Readiness	LUT: A2	City to implement. Not applicable to the project.
Public Information Programs	LUT: A3	City to implement. Not applicable to the project.

Table 18
Project Consistency with City CAP GHG Emission Reduction Measures

City CAP Measure	Measure Number	Project Consistency
Goal LUT: B – Encourage Ride-Sharing		
Facilitate Private and Public Mobility Services (Ride-Hailing, Ride-Sharing, Car-Sharing, Bike-Sharing)	LUT: B1	Consistent. Project site and amenities were designed to include ride-hailing areas (UBER, Lyft, private car services) and would have a central ride-sharing center in the leasing office. The project will also include private bike storage facilities.
Goal LUT: C – Encourage Transit Usage		
Provide a Bus Rapid Transit (BRT) System	LUT: C1	City to implement. Not applicable to the project.
Expand Transit Network	LUT: C2	City to implement. Not applicable to the project.
Increase Transit Frequency and Speed	LUT: C3	City to implement. Not applicable to the project.
Goal LUT: D – Adopt Active Transportation Initiatives		
Provide Traffic Calming Measures	LUT: D1	Consistent. Internal roadways would be designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips with traffic calming features. These include that all on-site project intersections would have marked crosswalks and approximately 50% of intersections would have raised medians; approximately 25% of internal streets would provide on-street parking and approximately 10% would have raised medians with landscaping; a raised median would be provided at 50% of the project access points; and an off-site deceleration lane for slowing entrance traffic to the site from Hawthorne Boulevard is included in the project design.
Improve Design of Development	LUT: D2	Consistent. The project includes design features intended to enhance transit orientation and encourage non-vehicular mobility. The project's pedestrian network, high-density development, and location near jobs and complementary land uses within close walking distance (three blocks) includes numerous neighborhood retail, restaurant, and personal service business would influence alternative modes of travel and result in shorter trip lengths, which would reduce GHG emissions. The project would also include an on-site work-share center to promote living and working within the planned community.
Goal LUT: E – Organizational Strategies		
Encourage Telecommuting and Alternative Schedules	LUT: E1	Not applicable.
Implement Commute Trip Reduction Programs	LUT: E2	Not applicable.
Provide Car-Sharing Programs	LUT: E3	Consistent. Project site and amenities were designed to include ride-hailing areas (UBER, Lyft, private car services) and would have a central ride-sharing center in the leasing office.
Goal LUT: F – Land Use Strategies		
Increase Diversity	LUT: F1	Consistent. The project would result in high-density development near jobs and complementary land uses.
Increase Transit Accessibility	LUT: F2	City to implement. Not applicable to the project.

Table 18
Project Consistency with City CAP GHG Emission Reduction Measures

City CAP Measure	Measure Number	Project Consistency
Integrate Affordable and Below-Market-Rate Housing	LUT: F3	City to establish these policies and ordinances. The project would include all market-rate housing units, not below-market-rate housing. However, the project would include construction of new housing and more affordable options than other established single-family residences in the vicinity.
Integrate Neighborhood Oriented Development (NOD) Principles	LUT: F4	Consistent. The project's pedestrian network, high-density development, and location near jobs and complementary land uses would influence alternative modes of travel and result in shorter trip lengths, which would reduce GHG emissions.
Goal LUT: G – Digital Technology Strategies		
Collaborate On and Implement the South Bay Digital Master Plan	LUT: G1	City to implement. Not applicable to the project.
Energy Efficiency (EE)		
Goal EE: A – Increase Energy Efficiency in Existing Residential Units		
EE Training, Education, and Recognition	EE: A1	Applies to existing residences; not applicable to the project.
Increase Participation in Existing EE Programs	EE: A2	Applies to existing residences; not applicable to the project.
Establish, Promote, or Require Home Energy Evaluations	EE: A3	Applies to existing residences; not applicable to the project.
Promote, Incentivize, or Require Residential Home Energy Renovations	EE: A4	Applies to existing residences; not applicable to the project.
Goal EE: B – Increase Energy Efficiency in New Residential Developments		
Encourage or Require EE Standards Exceeding Title 24	EE: B1	Consistent. The project would comply with the CALGreen Tier 1 standards, which currently require projects to exceed the Title 24, Part 6, of the California Code of Regulations energy efficiency standards by 15%. Specific design measures to meet this requirement will be determined during the building permit process. The project would also use high-efficiency lighting in the parking garage and all common areas. The project would provide Energy Star-rated appliances for each residential unit, including clothes washers, dishwashers, fans, and refrigerators.
Goal EE: C – Increase Energy Efficiency in Existing Commercial Units		
Training and Education	EE: C1	Applies to existing commercial uses; not applicable to the project.
Increase Participation in Existing EE Programs	EE: C2	Applies to existing commercial uses; not applicable to the project.
Incentivize or Require Non-Residential Energy Audits	EE: C3	Applies to existing commercial uses; not applicable to the project.
Promote or Require Commercial Energy Retrofits	EE: C4	Applies to existing commercial uses; not applicable to the project.

Table 18
Project Consistency with City CAP GHG Emission Reduction Measures

City CAP Measure	Measure Number	Project Consistency
Goal EE: D – Increase Energy Efficiency in New Commercial Developments		
Encourage or Require EE Standards Exceeding Title 24	EE: D1	Applies to new commercial uses; not applicable to the project.
Goal EE: E – Increase Energy Efficiency Through Water Efficiency		
Promote or Require Water Efficiency through SB X7-7	EE: E1	Consistent. Regarding indoor water use, the project would install low-flow bathroom and kitchen faucets, toilets, and showers. Regarding outdoor water, the project would install water-efficient devices and landscaping in accordance with applicable ordinances, including use of drought-tolerant species appropriate to the climate and region. The project has committed to not include any turf, which would reduce water use associated with landscaping.
Promote Water Efficiency Standards Exceeding SB X7-7	EE: E2	Not feasible. Per the applicant, recycled water is not available at the site and the reuse of urban water on site was determined to be infeasible.
Goal EE: F – Decrease Energy Demand Through Reducing Urban Heat Island Effect		
Promote Tree Planting for Shading and EE	EE: F1	Consistent. Site development footprint has almost no trees in it currently. The project's conceptual landscape plan includes planting of new trees within the community on its periphery.
Incentivize or Require Light-Reflecting Surfaces	EE: F2	Consistent. The project would comply with Title 24 or other local energy codes for cool roof reflective materials.
Goal EE: G – Participate in Education, Outreach, and Planning for Energy Efficiency		
Increase Energy Savings through the SCE Energy Leader Partnership	EE: G1	Not applicable.
Goal EE: H – Increase Energy Efficiency in Municipal Buildings		
Conduct Municipal Energy Audit	EE: H1	Applies to municipal buildings; not applicable to the project.
Require Green Building Certification	EE: H2	Applies to municipal buildings; not applicable to the project.
Implement Water Leak Detection Program	EE: H3	Applies to municipal buildings; not applicable to the project.
Participate in Demand Response Programs	EE: H4	Applies to municipal buildings; not applicable to the project.
Participate in Direct Install Program	EE: H5	Applies to municipal buildings; not applicable to the project.
Install Cool Roofs	EE: H6	Applies to municipal buildings; not applicable to the project.
Retrofit HVAC Equipment and Water Pumps	EE: H7	Applies to municipal buildings; not applicable to the project.
Utilize and Energy Management System	EE: H8	Applies to municipal buildings; not applicable to the project.
Goal EE: I – Increase Energy Efficiency in City Infrastructure		
Retrofit Traffic Signals and Outdoor Lighting	EE: I1	City to implement. Not applicable to the project.
Upgrade or Incorporate Water-Conserving Landscape	EE: I2	City to implement. Not applicable to the project.
Plant Trees for Shade and Carbon Sequestration	EE: I3	City to implement. Not applicable to the project.
Goal EE: J – Reduce Energy Consumption in the Long Term		
Develop and Energy Reinvestment Fund	EE: J1	City to implement. Not applicable to the project.

Table 18
Project Consistency with City CAP GHG Emission Reduction Measures

City CAP Measure	Measure Number	Project Consistency
Solid Waste (SW)		
Goal SW: A – Increase Diversion and Reduction of Residential Waste		
Education and Outreach to Residents	SW: A1	City to implement. Not applicable to the project.
Implement Residential Collection Programs to Increase Diversion of Waste	SW: A2	Consistent. The project would comply with all City and state regulations related to solid waste generation, storage, and disposal, including the California Integrated Waste Management Act, as amended.
Goal SW: B – Increase Diversion and Reduction of Commercial Waste		
Education and Outreach to Businesses	SW: B1	City to implement. Not applicable to the project.
Implement Commercial Collection Programs to Increase Diversion of Waste	SW: B2	City to implement. Not applicable to the project.
Goal SW: C – Reduce and Divert Municipal Waste		
Education and Program for Municipal Employees/ Facilities	SW: C1	City to implement. Not applicable to the project.
Urban Greenings (UG)		
Goal UG: A – Increase and Maintain Urban Greening in the Community		
Increase Community Gardens	UG: A1	No community gardens are planned as part of the project, but the project would be consistent with the goal of maximizing vegetation for CO_2 sequestration through the preservation of 18.97 acres of the 24.68-acre property as natural open space. This space would also have public access for hiking, biking, and equestrian uses.
Increase Rooftop Gardens	UG: A2	Not feasible. Rooftop gardens are not feasible for the project based on the minimal rooftop space available. Roof space is limited because it would be used to house project systems, primarily the heating, ventilation, and air conditioning systems, that would serve the entire project, and because of the multistory nature of the project, the ratio of roof space to residential space is small.
Support Local Farms	UG: A3	Not applicable.
Goal UG: B – Increase and Maintain Urban Greening in Municipal Facilities		
Restoration/Preservation of Landscapes	UG: B1	Applies to municipal facilities; not applicable to the project.
Increase Open Space	UG: B2	Applies to municipal facilities; not applicable to the project. However, the project would preserve 18.97 acres of the 24.68-acre property as natural open space.
Energy Generation and Storage (EGS)		
Goal EGS: A – Support Energy Generation and Storage in the Community		
Community Choice Aggregation	EGS: A1	City to implement; not applicable to the project.
Siting and Permitting	EGS: A2	Not feasible. Based on information provided by the project applicant, on-site generation of renewable energy using solar panels is not feasible given the minimal rooftop space available to provide the electricity needed to make rooftop solar

Table 18
Project Consistency with City CAP GHG Emission Reduction Measures

City CAP Measure	Measure Number	Project Consistency
		economically feasible and reliable for future residents. Roof space is limited because it would be used to house project systems, primarily the heating, ventilation, and air conditioning systems, that would serve the entire project, and because of the multistory nature of the project, the ratio of roof space to residential space is small. Rooftop solar is also inhibited by the over 300-foot-high mountain face directly to the south and east of the development site, which reduces solar sun access.
Policies and Ordinances	EGS: A3	City to implement; not applicable to the project.
Education and Outreach	EGS: A4	City to implement; not applicable to the project.
Explore Technologies in Municipal Facilities	EGS: A5	Applies to municipal facilities; not applicable to the project.

Source: City of Torrance and SBCCOG 2017.

Based on the analysis in Table 18, the project would be consistent with the applicable strategies and measures in the City CAP.

Project Consistency with SCAG's 2016 RTP/SCS

SCAG's 2016 RTP/SCS is a regional growth-management strategy that targets per capita GHG reduction from passenger vehicles and light-duty trucks in the Southern California region pursuant to SB 375. In addition to demonstrating the region's ability to attain and exceed the GHG emission-reduction targets set forth by CARB, the 2016 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 2016 RTP/SCS would result in more complete communities with a variety of transportation and housing choices, while reducing automobile use. With regard to individual developments, such as the project, the strategies and policies set forth in the 2016 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. The project's consistency with these three strategy categories is presented below.

1. Consistency with VMT Reduction Strategies and Policies

The project's consistency with this aspect of the 2016 RTP/SCS is demonstrated via the project's land use characteristics and features that would reduce vehicular trips and VMT, as well as the project's consistency with the regional growth forecast assumed in the 2016 RTP/SCS for the City. As discussed in Section 2.5.1, vehicle trip generation and planned development for the project site are concluded to have been anticipated in the SCAG 2016 RTP/SCS growth projections because the increased population at the project site would be accommodated by the City's predicted population projections in the Housing Element Update. Regarding VMT reduction characteristics, these are discussed in Section 2.4.2.2. In summary, the project site location and neighborhood enhancements that would reduce VMT and associated GHG emissions include proximity to job centers, increase in density compared to average residential development density, improvements for the pedestrian network, and provision of traffic calming measures at intersections and streets.

2. Increased Use of Alternative Fueled Vehicles Policy Initiative

The second goal of the 2016 RTP/SCS, with regard to individual development projects such as the project, is to increase alternative fueled vehicles to reduce per capita GHG emissions. This 2016 RTP/SCS policy initiative focuses on accelerating fleet conversion to electric or other near zero-emission technologies. The project would be consistent with these strategies since the EV charging station requirements of the CALGreen Tier 1 standards would be implemented into the project, including designating 25 spaces (i.e., 5%) of the total number of parking spaces as EV charging spaces capable of supporting future electric vehicle supply equipment.

3. Energy Efficiency Strategies and Policies

The third important focus within the 2016 RTP/SCS, for individual developments such as the proposed project, involves improving energy efficiency (e.g., reducing energy consumption) to reduce GHG emissions. The 2016 RTP/SCS goal is to actively encourage and create incentives for energy efficiency, where possible. The project would comply with the 2016 CALGreen Tier 1 standards, which would be required by the City, including demonstration that buildings exceed Title 24, Part 6, of the California Code of Regulations energy efficiency standards by 15%. Additionally, the project applicant committed to provide Energy Star-rated appliances for each residential unit. Finally, high-efficiency lighting would be incorporated in the parking garage and all common areas. In addition to installing LED lighting in all common areas, non-security or wayfinding lighting would include motion sensors to ensure that energy used for lighting is only used when needed.

Based on the analysis above, the proposed project would be consistent with the SCAG 2016 RTP/SCS.

Project Consistency with SB 32 and EO S-3-05

The project would also not impede the attainment of the GHG reduction goals for 2030 or 2050 identified in SB 32 and EO S-3-05, respectively. As discussed in Section 3.2.2, EO S-3-05 establishes the following goals: GHG emissions should be reduced to 2000 levels by 2010, to 1990 levels by 2020, and to 80% below 1990 levels by 2050. SB 32 establishes for a statewide GHG emissions reduction target whereby CARB, in adopting rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions, shall ensure that statewide GHG emissions are reduced to at least 40% below 1990 levels by December 31, 2030. While there are no established protocols or thresholds of significance for that future year analysis; CARB forecasts that compliance with the current Scoping Plan puts the state on a trajectory of meeting these long-term GHG goals, although the specific path to compliance is unknown (CARB 2014).

To begin, CARB has expressed optimism with regard to both the 2030 and 2050 goals. It states in the First Update to the Climate Change Scoping Plan that "California is on track to meet the near-term 2020 GHG emissions limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32" (CARB 2014). With regard to the 2050 target for reducing GHG emissions to 80% below 1990 levels, the First Update states the following (CARB 2014):

> This level of reduction is achievable in California. In fact, if California realizes the expected benefits of existing policy goals (such as 12,000 megawatts of renewable distributed generation by 2020, net zero energy homes after 2020, existing building retrofits under AB 758, and others) it could reduce emissions by 2030 to levels squarely in line with those needed in the developed world and to stay on track to reduce emissions to 80% below 1990 levels by 2050. Additional measures, including locally driven measures and those necessary to meet federal air quality standards in 2032, could lead to even greater emission reductions.

In other words, CARB believes that the state is on a trajectory to meet the 2030 and 2050 GHG reduction targets set forth in AB 32, SB 32, and EO S-3-05. This is confirmed in the Second Update, which states (CARB 2017b):

> The Proposed Plan builds upon the successful framework established by the Initial Scoping Plan and First Update, while also identifying new, technologically feasibility and cost-effective strategies to ensure that California meets its GHG reduction targets in a way that promotes and rewards innovation, continues to foster economic growth, and delivers improvements to the environment and public health, including in disadvantaged communities. The Proposed Plan is developed to be consistent with requirements set forth in AB 32, SB 32, and AB 197.

The project would not interfere with implementation of any of the above-described GHG reduction goals for 2030 or 2050 because the project would not exceed the SCAQMD's draft interim threshold of 3,000 MT CO_2e per year (SCAQMD 2008). As discussed in Section 3.4.1, Thresholds of Significance, this efficiency threshold was established based on the goal of AB 32 to reduce statewide

GHG emissions to 1990 levels by 2020. Because the project would not exceed the threshold, this analysis provides support for the conclusion that the project would not impede the state's trajectory toward the above-described statewide GHG reduction goals for 2030 or 2050. In addition, the project would comply with laws and regulations that would reduce GHG emissions

Furthermore, the project would not conflict with the state's trajectory toward future GHG reductions. In addition, since the specific path to compliance for the state in regards to the long-term goals will likely require development of technology or other changes that are not currently known or available, specific additional mitigation measures for the project would be speculative and cannot be identified at this time. The project's consistency would assist in meeting the City's contribution to GHG emission reduction targets in California. With respect to future GHG targets under SB 32 and EO S-3-05, CARB has also made clear its legal interpretation that it has the requisite authority to adopt whatever regulations are necessary, beyond the AB 32 horizon year of 2020, to meet SB 32's 40% reduction target by 2030 and EO S-3-05's 80% reduction target by 2050; this legal interpretation by an expert agency provides evidence that future regulations will be adopted to continue the state on its trajectory toward meeting these future GHG targets.

Based on the above considerations, the project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs, and no mitigation is required. This impact would be less than significant.

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APPENDIX A

CalEEMod Output Files, 10% Additional Soil Excavation Fugitive Dust Estimate, and Electric Vehicle Charging Space GHG Reduction Estimate

Solana Torrance Residential Development

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	439.00	Space	0.00	174,475.00	0
Parking Lot	45.00	Space	1.48	64,383.00	0
Health Club	7.47	1000sqft	0.00	7,475.00	0
User Defined Recreational	18.97	User Defined Unit	18.97	0.00	0
Apartments Mid Rise	248.00	Dwelling Unit	4.23	276,769.00	722

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	636.97	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See Section 1.0 Project Characteristics. Operational year 2019 consistent with traffic report. CO2 Intensity factor adjusted for 2016 SCE Power Content Label assuming 28% renewables (636.97 lb/MWh).

Land Use - See 1.1 Land Usage. Apartments Mid Rise includes res floor area & building circulation. Health Club = the leasing office & community room. User Defined Recreational = preserved open space.

Construction Phase - See 3.0 Construction Detail. Based on applicant-provided schedule assumptions.

Off-road Equipment - Architectural Coating. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions. Small portable air compressors (0.75 HP) used for architectural coating will be battery-operated.

Off-road Equipment - Default CalEEMod values. See 3.0 Construction Detail.

Off-road Equipment - Building Construction - Parking Garage. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions.

Off-road Equipment - Building Construction - Residential. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions.

Off-road Equipment - Grading. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions.

Off-road Equipment - Paving. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions.

Trips and VMT - See 3.0 Construction Detail. Based on applicant-provided assumptions and default CalEEMod values.

On-road Fugitive Dust - Assumed 99% worker paved (0.15 miles/one-way trip unpaved), 98% vendor paved (0.14 miles/one-way trip unpaved), and 99% hauling paved (0.20 miles/one-way trip unpaved).

Demolition - No demolition would occur.

Grading - See 3.0 Construction Detail. 119,270 CY of export (120,915 CY cut - 1,646 CY fill = 119,270 CY). Assumed 1 acre/day x 87 days = 87 acres disturbed.

Architectural Coating - Default CalEEMod values.

Vehicle Trips - Default CalEEMod Apartments Mid Rise trip rates and project-specific weekday trip rates (KHR Associates 2017) are consistent. Default CalEEMod Saturday and Sunday trip rates used. Health Club and City Park will not generate trips (onsite amenities).

Vehicle Emission Factors - Default CalEEMod emission factors for 2019.

Vehicle Emission Factors - Default CalEEMod emission factors for 2019.

Vehicle Emission Factors - Default CalEEMod emission factors for 2019.

Road Dust - Default CalEEMod values.

Woodstoves - No woodstoves. No fireplaces.

Consumer Products - Default CalEEMod values.

Area Coating - Default CalEEMod values.

Landscape Equipment - Default CalEEMod values.

Energy Use - Default CalEEMod values.

Water And Wastewater - Assumed 100% Aerobic. All project indoor water demand included in Apartments Mid Rise (KHR 2018). Default CalEEMod values for outdoor water use.

Solid Waste - Default CalEEMod values.

Construction Off-road Equipment Mitigation - Water Exposed Area, Frequency: 3 times per day. Unpaved Road Mitigation, Vehicle Speed: 15 mph. Soil Stabilizer for Unpaved Roads (surrogate for watering 3x day): 61% reduction PM10 & PM2.5.

Mobile Land Use Mitigation - Project Setting: Suburban Center. Increase Density: 10 DU/acre. Improve Destination Accessibility: Distance to Job Center: 5 miles. Improve Pedestrian Network: Project Site and Connecting Off-Site. Traffic Calming: 25% streets/25% intersections.

Area Mitigation - No mitigation applied.

Energy Mitigation - Exceed Title 24 by 15%. Install High Efficiency Lighting: 40% Lighting Energy Reduction. Energy Efficient Appliances: All.

Water Mitigation - Apply Water Conservation Strategy: 20% reduction in indoor. No outdoor water reduction applied.

Waste Mitigation - Percent Reduction in Waste Disposed: 50%. Waste diversion consistent with Assembly Bill 939.

Operational Off-Road Equipment - No operationl off-road equipment.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	35.00	87.00
tblConstructionPhase	NumDays	370.00	153.00
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	370.00	390.00
tblConstructionPhase	NumDays	20.00	66.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	210.80	0.00
tblFireplaces	NumberNoFireplace	24.80	0.00
tblFireplaces	NumberWood	12.40	0.00
tblGrading	AcresOfGrading	0.00	87.00
tblGrading	MaterialExported	0.00	119,270.00
tblLandUse	LandUseSquareFeet	175,600.00	174,475.00
tblLandUse	LandUseSquareFeet	18,000.00	64,383.00
tblLandUse	LandUseSquareFeet	7,470.00	7,475.00
tblLandUse	LandUseSquareFeet	248,000.00	276,769.00
tblLandUse	LotAcreage	3.95	0.00
tblLandUse	LotAcreage	0.41	1.48
tblLandUse	LotAcreage	0.17	0.00

tblLandUse	LotAcreage	0.00	18.97
tblLandUse	LotAcreage	6.53	4.23
tblLandUse	Population	709.00	722.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOnRoadDust	HaulingPercentPave	100.00	99.00
tblOnRoadDust	HaulingPercentPave	100.00	99.00
tblOnRoadDust	HaulingPercentPave	100.00	99.00
tblOnRoadDust	HaulingPercentPave	100.00	99.00
tblOnRoadDust	HaulingPercentPave	100.00	99.00

tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	636.97
tblTripsAndVMT	HaulingTripNumber	14,909.00	14,910.00
tblTripsAndVMT	VendorTripNumber	67.00	40.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	67.00	30.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	8.00	24.00
tblTripsAndVMT	WorkerTripNumber	282.00	100.00
tblTripsAndVMT	WorkerTripNumber	282.00	182.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00

tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	16,158,198.35	32,150,660.00
tblWater	IndoorWaterUseRate	441,799.29	0.00
tblWater	OutdoorWaterUseRate	270,780.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	NumberCatalytic	12.40	0.00
tblWoodstoves	NumberNoncatalytic	12.40	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.5974	67.7523	26.5182	0.1560	78.7898	0.9916	79.7814	8.4630	0.9191	9.3821	0.0000	16,706.4981	16,706.4981	1.6033	0.0000	16,746.5808
2019	2.0284	12.3905	14.0802	0.0372	47.6720	0.5022	48.1742	5.1267	0.4668	5.5935	0.0000	3,727.2970	3,727.2970	0.3773	0.0000	3,736.7300
2020	30.4303	11.6902	15.3583	0.0432	60.8262	0.4420	61.2682	6.5445	0.4107	6.9552	0.0000	4,316.7903	4,316.7903	0.3874	0.0000	4,326.4743
Maximum	**30.4303**	**67.7523**	**26.5182**	**0.1560**	**78.7898**	**0.9916**	**79.7814**	**8.4630**	**0.9191**	**9.3821**	**0.0000**	**16,706.4981**	**16,706.4981**	**1.6033**	**0.0000**	**16,746.5808**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.5974	67.7523	26.5182	0.1560	21.5280	0.9916	22.5197	2.7466	0.9191	3.6657	0.0000	16,706.4981	16,706.4981	1.6033	0.0000	16,746.5808
2019	2.0284	12.3905	14.0802	0.0372	13.0622	0.5022	13.5644	1.6717	0.4668	2.1385	0.0000	3,727.2970	3,727.2970	0.3773	0.0000	3,736.7300
2020	30.4303	11.6902	15.3583	0.0432	16.6851	0.4420	17.1271	2.1379	0.4107	2.5486	0.0000	4,316.7903	4,316.7903	0.3874	0.0000	4,326.4743
Maximum	**30.4303**	**67.7523**	**26.5182**	**0.1560**	**21.5280**	**0.9916**	**22.5197**	**2.7466**	**0.9191**	**3.6657**	**0.0000**	**16,706.4981**	**16,706.4981**	**1.6033**	**0.0000**	**16,746.5808**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	72.62	0.00	71.88	67.44	0.00	61.91	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.8587	0.2387	20.6143	1.0800e-003		0.1129	0.1129		0.1129	0.1129	0.0000	36.9527	36.9527	0.0365	0.0000	37.8643
Energy	0.0884	0.7575	0.3397	4.8200e-003		0.0610	0.0610		0.0610	0.0610		963.8155	963.8155	0.0185	0.0177	969.5430
Mobile	3.6906	18.1242	49.5855	0.1513	11.9848	0.1800	12.1648	3.2079	0.1692	3.3772		15,360.6570	15,360.6570	0.9165		15,383.5701
Total	**10.6377**	**19.1204**	**70.5395**	**0.1572**	**11.9848**	**0.3539**	**12.3387**	**3.2079**	**0.3431**	**3.5511**	**0.0000**	**16,361.4252**	**16,361.4252**	**0.9715**	**0.0177**	**16,390.9773**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.8587	0.2387	20.6143	1.0800e-003		0.1129	0.1129		0.1129	0.1129	0.0000	36.9527	36.9527	0.0365	0.0000	37.8643
Energy	0.0814	0.6978	0.3126	4.4400e-003		0.0562	0.0562		0.0562	0.0562		887.8611	887.8611	0.0170	0.0163	893.1372
Mobile	3.4444	16.3714	43.7072	0.1304	10.2470	0.1558	10.4028	2.7428	0.1464	2.8892		13,238.8241	13,238.8241	0.8046		13,258.9384
Total	**10.3845**	**17.3078**	**64.6340**	**0.1359**	**10.2470**	**0.3248**	**10.5719**	**2.7428**	**0.3155**	**3.0583**	**0.0000**	**14,163.6378**	**14,163.6378**	**0.8581**	**0.0163**	**14,189.9398**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	2.38	9.48	8.37	13.55	14.50	8.21	14.32	14.50	8.05	13.88	0.00	13.43	13.43	11.67	7.87	13.43

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/16/2018	5/16/2018	5	87	
2	Building Construction - Parking Garage	Building Construction	5/17/2018	12/17/2018	5	153	
3	Paving	Paving	6/1/2018	8/1/2018	5	44	
4	Building Construction - Residential	Building Construction	12/16/2018	6/12/2020	5	390	
5	Architectural Coating	Architectural Coating	3/15/2020	6/15/2020	5	66	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 87

Acres of Paving: 1.48

Residential Indoor: 560,457; Residential Outdoor: 186,819; Non-Residential Indoor: 11,213; Non-Residential Outdoor: 3,738; Striped Parking Area: 14,331 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Grading	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Scrapers	0	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction - Parking Garage	Cranes	0	7.00	231	0.29
Building Construction - Parking Garage	Forklifts	0	8.00	89	0.20
Building Construction - Parking Garage	Generator Sets	0	8.00	84	0.74
Building Construction - Parking Garage	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction - Parking Garage	Welders	0	8.00	46	0.45
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38
Building Construction - Residential	Cranes	1	6.00	231	0.29
Building Construction - Residential	Forklifts	2	8.00	89	0.20
Building Construction - Residential	Generator Sets	0	8.00	84	0.74
Building Construction - Residential	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Building Construction - Residential	Welders	1	4.00	46	0.45
Architectural Coating	Air Compressors	0	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	3	24.00	0.00	14,910.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Parking Garage	2	100.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Residential	4	182.00	30.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	56.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2155	0.0000	1.2155	0.1380	0.0000	0.1380			0.0000			0.0000
Off-Road	1.0081	11.5167	8.2868	0.0166		0.4809	0.4809		0.4424	0.4424		1,668.0326	1,668.0326	0.5193		1,681.0146
Total	**1.0081**	**11.5167**	**8.2868**	**0.0166**	**1.2155**	**0.4809**	**1.6964**	**0.1380**	**0.4424**	**0.5804**		**1,668.0326**	**1,668.0326**	**0.5193**		**1,681.0146**

3.2 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.7441	56.1248	12.2557	0.1366	53.4167	0.2147	53.6314	5.8493	0.2054	6.0547		14,755.1273	14,755.1273	1.0734		14,781.9614
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1468	0.1108	1.1935	2.8500e-003	5.4580	2.3900e-003	5.4604	0.5887	2.2100e-003	0.5909		283.3382	283.3382	0.0107		283.6048
Total	**1.8908**	**56.2356**	**13.4491**	**0.1394**	**58.8747**	**0.2171**	**59.0918**	**6.4380**	**0.2076**	**6.6456**		**15,038.4655**	**15,038.4655**	**1.0840**		**15,065.5662**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4741	0.0000	0.4741	0.0538	0.0000	0.0538			0.0000			0.0000
Off-Road	1.0081	11.5167	8.2868	0.0166		0.4809	0.4809		0.4424	0.4424	0.0000	1,668.0326	1,668.0326	0.5193		1,681.0146
Total	**1.0081**	**11.5167**	**8.2868**	**0.0166**	**0.4741**	**0.4809**	**0.9550**	**0.0538**	**0.4424**	**0.4962**	**0.0000**	**1,668.0326**	**1,668.0326**	**0.5193**		**1,681.0146**

3.2 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.7441	56.1248	12.2557	0.1366	15.0182	0.2147	15.2329	2.0160	0.2054	2.2214		14,755.1273	14,755.1273	1.0734		14,781.9614
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1468	0.1108	1.1935	2.8500e-003	1.5057	2.3900e-003	1.5081	0.1941	2.2100e-003	0.1963		283.3382	283.3382	0.0107		283.6048
Total	**1.8908**	**56.2356**	**13.4491**	**0.1394**	**16.5239**	**0.2171**	**16.7410**	**2.2101**	**0.2076**	**2.4178**		**15,038.4655**	**15,038.4655**	**1.0840**		**15,065.5662**

3.3 Building Construction - Parking Garage - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5322	5.2595	4.6734	6.2100e-003		0.3726	0.3726		0.3428	0.3428		625.5519	625.5519	0.1947		630.4205
Total	**0.5322**	**5.2595**	**4.6734**	**6.2100e-003**		**0.3726**	**0.3726**		**0.3428**	**0.3428**		**625.5519**	**625.5519**	**0.1947**		**630.4205**

3.3 Building Construction - Parking Garage - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1918	4.9134	1.4734	0.0103	8.3761	0.0351	8.4112	0.8835	0.0336	0.9171		1,096.5994	1,096.5994	0.0791		1,098.5775
Worker	0.6115	0.4617	4.9727	0.0119	22.7417	9.9700e-003	22.7517	2.4528	9.1900e-003	2.4620		1,180.5760	1,180.5760	0.0444		1,181.6867
Total	**0.8032**	**5.3751**	**6.4461**	**0.0222**	**31.1178**	**0.0451**	**31.1629**	**3.3363**	**0.0428**	**3.3791**		**2,277.1754**	**2,277.1754**	**0.1236**		**2,280.2642**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5322	5.2595	4.6734	6.2100e-003		0.3726	0.3726		0.3428	0.3428	0.0000	625.5519	625.5519	0.1947		630.4205
Total	**0.5322**	**5.2595**	**4.6734**	**6.2100e-003**		**0.3726**	**0.3726**		**0.3428**	**0.3428**	**0.0000**	**625.5519**	**625.5519**	**0.1947**		**630.4205**

3.3 Building Construction - Parking Garage - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1918	4.9134	1.4734	0.0103	2.1922	0.0351	2.2273	0.2661	0.0336	0.2997		1,096.599 4	1,096.599 4	0.0791		1,098.577 5
Worker	0.6115	0.4617	4.9727	0.0119	6.2737	9.9700e-003	6.2836	0.8088	9.1900e-003	0.8180		1,180.576 0	1,180.576 0	0.0444		1,181.686 7
Total	**0.8032**	**5.3751**	**6.4461**	**0.0222**	**8.4658**	**0.0451**	**8.5109**	**1.0750**	**0.0428**	**1.1177**		**2,277.175 4**	**2,277.175 4**	**0.1236**		**2,280.264 2**

3.4 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8219	8.7605	7.3982	0.0114		0.4781	0.4781		0.4398	0.4398		1,147.044 4	1,147.044 4	0.3571		1,155.971 6
Paving	0.0881					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9100**	**8.7605**	**7.3982**	**0.0114**		**0.4781**	**0.4781**		**0.4398**	**0.4398**		**1,147.044 4**	**1,147.044 4**	**0.3571**		**1,155.971 6**

3.4 Paving - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.5900e-003	0.2457	0.0737	5.1000e-004	0.4188	1.7500e-003	0.4206	0.0442	1.6800e-003	0.0459		54.8300	54.8300	3.9600e-003		54.9289
Worker	0.0489	0.0369	0.3978	9.5000e-004	1.8193	8.0000e-004	1.8201	0.1962	7.4000e-004	0.1970		94.4461	94.4461	3.5500e-003		94.5349
Total	**0.0585**	**0.2826**	**0.4715**	**1.4600e-003**	**2.2381**	**2.5500e-003**	**2.2407**	**0.2404**	**2.4200e-003**	**0.2428**		**149.2761**	**149.2761**	**7.5100e-003**		**149.4638**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8219	8.7605	7.3982	0.0114		0.4781	0.4781		0.4398	0.4398	0.0000	1,147.0444	1,147.0444	0.3571		1,155.9716
Paving	0.0881					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9100**	**8.7605**	**7.3982**	**0.0114**		**0.4781**	**0.4781**		**0.4398**	**0.4398**	**0.0000**	**1,147.0444**	**1,147.0444**	**0.3571**		**1,155.9716**

3.4 Paving - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.5900e-003	0.2457	0.0737	5.1000e-004	0.1096	1.7500e-003	0.1114	0.0133	1.6800e-003	0.0150		54.8300	54.8300	3.9600e-003		54.9289
Worker	0.0489	0.0369	0.3978	9.5000e-004	0.5019	8.0000e-004	0.5027	0.0647	7.4000e-004	0.0654		94.4461	94.4461	3.5500e-003		94.5349
Total	**0.0585**	**0.2826**	**0.4715**	**1.4600e-003**	**0.6115**	**2.5500e-003**	**0.6141**	**0.0780**	**2.4200e-003**	**0.0804**		**149.2761**	**149.2761**	**7.5100e-003**		**149.4638**

3.5 Building Construction - Residential - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0052	9.1056	5.2434	8.6500e-003		0.5295	0.5295		0.4917	0.4917		846.7625	846.7625	0.2512		853.0427
Total	**1.0052**	**9.1056**	**5.2434**	**8.6500e-003**		**0.5295**	**0.5295**		**0.4917**	**0.4917**		**846.7625**	**846.7625**	**0.2512**		**853.0427**

3.5 Building Construction - Residential - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1438	3.6851	1.1050	7.7200e-003	6.2821	0.0263	6.3084	0.6626	0.0252	0.6878		822.4496	822.4496	0.0593		823.9331
Worker	1.1129	0.8403	9.0503	0.0216	41.3899	0.0181	41.4081	4.4641	0.0167	4.4809		2,148.6483	2,148.6483	0.0809		2,150.6698
Total	**1.2567**	**4.5254**	**10.1553**	**0.0293**	**47.6720**	**0.0445**	**47.7165**	**5.1267**	**0.0419**	**5.1686**		**2,971.0978**	**2,971.0978**	**0.1402**		**2,974.6029**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0052	9.1056	5.2434	8.6500e-003		0.5295	0.5295		0.4917	0.4917	0.0000	846.7625	846.7625	0.2512		853.0427
Total	**1.0052**	**9.1056**	**5.2434**	**8.6500e-003**		**0.5295**	**0.5295**		**0.4917**	**0.4917**	**0.0000**	**846.7625**	**846.7625**	**0.2512**		**853.0427**

3.5 Building Construction - Residential - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1438	3.6851	1.1050	7.7200e-003	1.6441	0.0263	1.6705	0.1996	0.0252	0.2248		822.4496	822.4496	0.0593		823.9331
Worker	1.1129	0.8403	9.0503	0.0216	11.4181	0.0181	11.4362	1.4721	0.0167	1.4888		2,148.6483	2,148.6483	0.0809		2,150.6698
Total	**1.2567**	**4.5254**	**10.1553**	**0.0293**	**13.0622**	**0.0445**	**13.1067**	**1.6717**	**0.0419**	**1.7136**		**2,971.0978**	**2,971.0978**	**0.1402**		**2,974.6029**

3.5 Building Construction - Residential - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8905	8.1740	5.0118	8.6600e-003		0.4621	0.4621		0.4291	0.4291		834.7876	834.7876	0.2486		841.0036
Total	**0.8905**	**8.1740**	**5.0118**	**8.6600e-003**		**0.4621**	**0.4621**		**0.4291**	**0.4291**		**834.7876**	**834.7876**	**0.2486**		**841.0036**

3.5 Building Construction - Residential - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1300	3.4765	1.0154	7.6300e-003	6.2821	0.0225	6.3046	0.6626	0.0215	0.6841		813.8313	813.8313	0.0572		815.2606
Worker	1.0079	0.7400	8.0531	0.0209	41.3899	0.0175	41.4075	4.4641	0.0162	4.4803		2,078.6781	2,078.6781	0.0715		2,080.4658
Total	**1.1379**	**4.2165**	**9.0685**	**0.0285**	**47.6720**	**0.0400**	**47.7120**	**5.1267**	**0.0377**	**5.1644**		**2,892.5094**	**2,892.5094**	**0.1287**		**2,895.7264**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8905	8.1740	5.0118	8.6600e-003		0.4621	0.4621		0.4291	0.4291	0.0000	834.7876	834.7876	0.2486		841.0036
Total	**0.8905**	**8.1740**	**5.0118**	**8.6600e-003**		**0.4621**	**0.4621**		**0.4291**	**0.4291**	**0.0000**	**834.7876**	**834.7876**	**0.2486**		**841.0036**

3.5 Building Construction - Residential - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1300	3.4765	1.0154	7.6300e-003	1.6441	0.0225	1.6666	0.1996	0.0215	0.2211		813.8313	813.8313	0.0572		815.2606
Worker	1.0079	0.7400	8.0531	0.0209	11.4181	0.0175	11.4356	1.4721	0.0162	1.4882		2,078.6781	2,078.6781	0.0715		2,080.4658
Total	**1.1379**	**4.2165**	**9.0685**	**0.0285**	**13.0622**	**0.0400**	**13.1023**	**1.6717**	**0.0377**	**1.7093**		**2,892.5094**	**2,892.5094**	**0.1287**		**2,895.7264**

3.5 Building Construction - Residential - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7991	7.4243	4.8306	8.6600e-003		0.4035	0.4035		0.3747	0.3747		818.8928	818.8928	0.2466		825.0585
Total	**0.7991**	**7.4243**	**4.8306**	**8.6600e-003**		**0.4035**	**0.4035**		**0.3747**	**0.3747**		**818.8928**	**818.8928**	**0.2466**		**825.0585**

3.5 Building Construction - Residential - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1115	3.1905	0.9222	7.5700e-003	6.2821	0.0153	6.2973	0.6626	0.0146	0.6772		808.3472	808.3472	0.0541		809.6985
Worker	0.9301	0.6597	7.2984	0.0202	41.3899	0.0170	41.4069	4.4641	0.0157	4.4798		2,015.505 1	2,015.505 1	0.0635		2,017.093 3
Total	**1.0416**	**3.8502**	**8.2206**	**0.0278**	**47.6720**	**0.0323**	**47.7043**	**5.1267**	**0.0303**	**5.1570**		**2,823.852 3**	**2,823.852 3**	**0.1176**		**2,826.791 8**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7991	7.4243	4.8306	8.6600e-003		0.4035	0.4035		0.3747	0.3747	0.0000	818.8928	818.8928	0.2466		825.0585
Total	**0.7991**	**7.4243**	**4.8306**	**8.6600e-003**		**0.4035**	**0.4035**		**0.3747**	**0.3747**	**0.0000**	**818.8928**	**818.8928**	**0.2466**		**825.0585**

3.5 Building Construction - Residential - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1115	3.1905	0.9222	7.5700e-003	1.6441	0.0153	1.6594	0.1996	0.0146	0.2142		808.3472	808.3472	0.0541		809.6985
Worker	0.9301	0.6597	7.2984	0.0202	11.4181	0.0170	11.4351	1.4721	0.0157	1.4877		2,015.505 1	2,015.505 1	0.0635		2,017.093 3
Total	**1.0416**	**3.8502**	**8.2206**	**0.0278**	**13.0622**	**0.0323**	**13.0945**	**1.6717**	**0.0303**	**1.7019**		**2,823.852 3**	**2,823.852 3**	**0.1176**		**2,826.791 8**

3.6 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.2960					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**28.2960**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.6 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.4400e-003	0.2127	0.0615	5.0000e-004	0.4188	1.0200e-003	0.4198	0.0442	9.7000e-004	0.0452		53.8898	53.8898	3.6000e-003		53.9799
Worker	0.2862	0.2030	2.2457	6.2300e-003	12.7354	5.2300e-003	12.7406	1.3736	4.8200e-003	1.3784		620.1554	620.1554	0.0196		620.6441
Total	**0.2936**	**0.4157**	**2.3071**	**6.7300e-003**	**13.1542**	**6.2500e-003**	**13.1604**	**1.4178**	**5.7900e-003**	**1.4236**		**674.0452**	**674.0452**	**0.0232**		**674.6240**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.2960					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**28.2960**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.6 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.4400e-003	0.2127	0.0615	5.0000e-004	0.1096	1.0200e-003	0.1106	0.0133	9.7000e-004	0.0143		53.8898	53.8898	3.6000e-003		53.9799
Worker	0.2862	0.2030	2.2457	6.2300e-003	3.5133	5.2300e-003	3.5185	0.4529	4.8200e-003	0.4578		620.1554	620.1554	0.0196		620.6441
Total	**0.2936**	**0.4157**	**2.3071**	**6.7300e-003**	**3.6229**	**6.2500e-003**	**3.6291**	**0.4663**	**5.7900e-003**	**0.4720**		**674.0452**	**674.0452**	**0.0232**		**674.6240**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Improve Destination Accessibility

Improve Pedestrian Network

Provide Traffic Calming Measures

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.4444	16.3714	43.7072	0.1304	10.2470	0.1558	10.4028	2.7428	0.1464	2.8892		13,238.8241	13,238.8241	0.8046		13,258.9384
Unmitigated	3.6906	18.1242	49.5855	0.1513	11.9848	0.1800	12.1648	3.2079	0.1692	3.3772		15,360.6570	15,360.6570	0.9165		15,383.5701

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,649.20	1,584.72	1453.28	5,508,449	4,709,724
Enclosed Parking with Elevator	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	1,649.20	1,584.72	1,453.28	5,508,449	4,709,724

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	52	39	9
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
User Defined Recreational	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925
Enclosed Parking with Elevator	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925
Health Club	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925
Parking Lot	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925
User Defined Recreational	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0814	0.6978	0.3126	4.4400e-003		0.0562	0.0562		0.0562	0.0562		887.8611	887.8611	0.0170	0.0163	893.1372
NaturalGas Unmitigated	0.0884	0.7575	0.3397	4.8200e-003		0.0610	0.0610		0.0610	0.0610		963.8155	963.8155	0.0185	0.0177	969.5430

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	7764.41	0.0837	0.7155	0.3045	4.5700e-003		0.0579	0.0579		0.0579	0.0579		913.4601	913.4601	0.0175	0.0168	918.8884
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	428.021	4.6200e-003	0.0420	0.0353	2.5000e-004		3.1900e-003	3.1900e-003		3.1900e-003	3.1900e-003		50.3554	50.3554	9.7000e-004	9.2000e-004	50.6546
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0884**	**0.7575**	**0.3397**	**4.8200e-003**		**0.0610**	**0.0610**		**0.0610**	**0.0610**		**963.8155**	**963.8155**	**0.0185**	**0.0177**	**969.5430**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	7.16193	0.0772	0.6600	0.2809	4.2100e-003		0.0534	0.0534		0.0534	0.0534		842.5798	842.5798	0.0162	0.0155	847.5868
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0.384891	4.1500e-003	0.0377	0.0317	2.3000e-004		2.8700e-003	2.8700e-003		2.8700e-003	2.8700e-003		45.2813	45.2813	8.7000e-004	8.3000e-004	45.5504
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0814**	**0.6978**	**0.3126**	**4.4400e-003**		**0.0562**	**0.0562**		**0.0562**	**0.0562**		**887.8611**	**887.8611**	**0.0170**	**0.0163**	**893.1372**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.8587	0.2387	20.6143	1.0800e-003		0.1129	0.1129		0.1129	0.1129	0.0000	36.9527	36.9527	0.0365	0.0000	37.8643
Unmitigated	6.8587	0.2387	20.6143	1.0800e-003		0.1129	0.1129		0.1129	0.1129	0.0000	36.9527	36.9527	0.0365	0.0000	37.8643

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5117					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.7126					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6344	0.2387	20.6143	1.0800e-003		0.1129	0.1129		0.1129	0.1129		36.9527	36.9527	0.0365		37.8643
Total	**6.8587**	**0.2387**	**20.6143**	**1.0800e-003**		**0.1129**	**0.1129**		**0.1129**	**0.1129**	**0.0000**	**36.9527**	**36.9527**	**0.0365**	**0.0000**	**37.8643**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5117					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.7126					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6344	0.2387	20.6143	1.0800e-003		0.1129	0.1129		0.1129	0.1129		36.9527	36.9527	0.0365		37.8643
Total	**6.8587**	**0.2387**	**20.6143**	**1.0800e-003**		**0.1129**	**0.1129**		**0.1129**	**0.1129**	**0.0000**	**36.9527**	**36.9527**	**0.0365**	**0.0000**	**37.8643**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Solana Torrance Residential Development

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	439.00	Space	0.00	174,475.00	0
Parking Lot	45.00	Space	1.48	64,383.00	0
Health Club	7.47	1000sqft	0.00	7,475.00	0
User Defined Recreational	18.97	User Defined Unit	18.97	0.00	0
Apartments Mid Rise	248.00	Dwelling Unit	4.23	276,769.00	722

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	636.97	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See Section 1.0 Project Characteristics. Operational year 2019 consistent with traffic report. CO2 Intensity factor adjusted for 2016 SCE Power Content Label assuming 28% renewables (636.97 lb/MWh).

Land Use - See 1.1 Land Usage. Apartments Mid Rise includes res floor area & building circulation. Health Club = the leasing office & community room. User Defined Recreational = preserved open space.

Construction Phase - See 3.0 Construction Detail. Based on applicant-provided schedule assumptions.

Off-road Equipment - Architectural Coating. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions. Small portable air compressors (0.75 HP) used for architectural coating will be battery-operated.

Off-road Equipment - Default CalEEMod values. See 3.0 Construction Detail.

Off-road Equipment - Building Construction - Parking Garage. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions.

Off-road Equipment - Building Construction - Residential. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions.

Off-road Equipment - Grading. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions.

Off-road Equipment - Paving. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions.

Trips and VMT - See 3.0 Construction Detail. Based on applicant-provided assumptions and default CalEEMod values.

On-road Fugitive Dust - Assumed 99% worker paved (0.15 miles/one-way trip unpaved), 98% vendor paved (0.14 miles/one-way trip unpaved), and 99% hauling paved (0.20 miles/one-way trip unpaved).

Demolition - No demolition would occur.

Grading - See 3.0 Construction Detail. 119,270 CY of export (120,915 CY cut - 1,646 CY fill = 119,270 CY). Assumed 1 acre/day x 87 days = 87 acres disturbed.

Architectural Coating - Default CalEEMod values.

Vehicle Trips - Default CalEEMod Apartments Mid Rise trip rates and project-specific weekday trip rates (KHR Associates 2017) are consistent. Default CalEEMod Saturday and Sunday trip rates used. Health Club and City Park will not generate trips (onsite amenities).

Vehicle Emission Factors - Default CalEEMod emission factors for 2019.

Vehicle Emission Factors - Default CalEEMod emission factors for 2019.

Vehicle Emission Factors - Default CalEEMod emission factors for 2019.

Road Dust - Default CalEEMod values.

Woodstoves - No woodstoves. No fireplaces.

Consumer Products - Default CalEEMod values.

Area Coating - Default CalEEMod values.

Landscape Equipment - Default CalEEMod values.

Energy Use - Default CalEEMod values.

Water And Wastewater - Assumed 100% Aerobic. All project indoor water demand included in Apartments Mid Rise (KHR 2018). Default CalEEMod values for outdoor water use.

Solid Waste - Default CalEEMod values.

Construction Off-road Equipment Mitigation - Water Exposed Area, Frequency: 3 times per day. Unpaved Road Mitigation, Vehicle Speed: 15 mph. Soil Stabilizer for Unpaved Roads (surrogate for watering 3x day): 61% reduction PM10 & PM2.5.

Mobile Land Use Mitigation - Project Setting: Suburban Center. Increase Density: 10 DU/acre. Improve Destination Accessibility: Distance to Job Center: 5 miles. Improve Pedestrian Network: Project Site and Connecting Off-Site. Traffic Calming: 25% streets/25% intersections.

Area Mitigation - No mitigation applied.

Energy Mitigation - Exceed Title 24 by 15%. Install High Efficiency Lighting: 40% Lighting Energy Reduction. Energy Efficient Appliances: All.

Water Mitigation - Apply Water Conservation Strategy: 20% reduction in indoor. No outdoor water reduction applied.

Waste Mitigation - Percent Reduction in Waste Disposed: 50%. Waste diversion consistent with Assembly Bill 939.

Operational Off-Road Equipment - No operationl off-road equipment.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	35.00	87.00
tblConstructionPhase	NumDays	370.00	153.00
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	370.00	390.00
tblConstructionPhase	NumDays	20.00	66.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	210.80	0.00
tblFireplaces	NumberNoFireplace	24.80	0.00
tblFireplaces	NumberWood	12.40	0.00
tblGrading	AcresOfGrading	0.00	87.00
tblGrading	MaterialExported	0.00	119,270.00
tblLandUse	LandUseSquareFeet	175,600.00	174,475.00
tblLandUse	LandUseSquareFeet	18,000.00	64,383.00
tblLandUse	LandUseSquareFeet	7,470.00	7,475.00
tblLandUse	LandUseSquareFeet	248,000.00	276,769.00
tblLandUse	LotAcreage	3.95	0.00
tblLandUse	LotAcreage	0.41	1.48
tblLandUse	LotAcreage	0.17	0.00

tblLandUse	LotAcreage	0.00	18.97
tblLandUse	LotAcreage	6.53	4.23
tblLandUse	Population	709.00	722.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOnRoadDust	HaulingPercentPave	100.00	99.00
tblOnRoadDust	HaulingPercentPave	100.00	99.00
tblOnRoadDust	HaulingPercentPave	100.00	99.00
tblOnRoadDust	HaulingPercentPave	100.00	99.00
tblOnRoadDust	HaulingPercentPave	100.00	99.00

tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	636.97
tblTripsAndVMT	HaulingTripNumber	14,909.00	14,910.00
tblTripsAndVMT	VendorTripNumber	67.00	40.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	67.00	30.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	8.00	24.00
tblTripsAndVMT	WorkerTripNumber	282.00	100.00
tblTripsAndVMT	WorkerTripNumber	282.00	182.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00

tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	16,158,198.35	32,150,660.00
tblWater	IndoorWaterUseRate	441,799.29	0.00
tblWater	OutdoorWaterUseRate	270,780.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	NumberCatalytic	12.40	0.00
tblWoodstoves	NumberNoncatalytic	12.40	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.4175	66.9833	27.4926	0.1585	78.7898	0.9907	79.7805	8.4630	0.9182	9.3812	0.0000	16,975.1402	16,975.1402	1.5636	0.0000	17,014.2306
2019	1.9244	12.3141	14.7084	0.0387	47.6720	0.5018	48.1738	5.1267	0.4665	5.5932	0.0000	3,878.8057	3,878.8057	0.3781	0.0000	3,888.2574
2020	30.3042	11.6074	16.1431	0.0451	60.8262	0.4417	61.2679	6.5445	0.4105	6.9550	0.0000	4,504.5204	4,504.5204	0.3890	0.0000	4,514.2448
Maximum	**30.3042**	**66.9833**	**27.4926**	**0.1585**	**78.7898**	**0.9907**	**79.7805**	**8.4630**	**0.9182**	**9.3812**	**0.0000**	**16,975.1402**	**16,975.1402**	**1.5636**	**0.0000**	**17,014.2306**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	3.4175	66.9833	27.4926	0.1585	21.5280	0.9907	22.5187	2.7466	0.9182	3.6648	0.0000	16,975.1402	16,975.1402	1.5636	0.0000	17,014.2306
2019	1.9244	12.3141	14.7084	0.0387	13.0622	0.5018	13.5640	1.6717	0.4665	2.1381	0.0000	3,878.8057	3,878.8057	0.3781	0.0000	3,888.2574
2020	30.3042	11.6074	16.1431	0.0451	16.6851	0.4417	17.1268	2.1379	0.4105	2.5484	0.0000	4,504.5204	4,504.5204	0.3890	0.0000	4,514.2448
Maximum	**30.3042**	**66.9833**	**27.4926**	**0.1585**	**21.5280**	**0.9907**	**22.5187**	**2.7466**	**0.9182**	**3.6648**	**0.0000**	**16,975.1402**	**16,975.1402**	**1.5636**	**0.0000**	**17,014.2306**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	72.62	0.00	71.88	67.44	0.00	61.92	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.8587	0.2387	20.6143	1.0800e-003		0.1129	0.1129		0.1129	0.1129	0.0000	36.9527	36.9527	0.0365	0.0000	37.8643
Energy	0.0884	0.7575	0.3397	4.8200e-003		0.0610	0.0610		0.0610	0.0610		963.8155	963.8155	0.0185	0.0177	969.5430
Mobile	3.7855	17.5927	52.1352	0.1591	11.9848	0.1789	12.1637	3.2079	0.1682	3.3761		16,149.5499	16,149.5499	0.9224		16,172.6098
Total	**10.7325**	**18.5889**	**73.0892**	**0.1650**	**11.9848**	**0.3528**	**12.3376**	**3.2079**	**0.3421**	**3.5500**	**0.0000**	**17,150.3181**	**17,150.3181**	**0.9773**	**0.0177**	**17,180.0171**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6.8587	0.2387	20.6143	1.0800e-003		0.1129	0.1129		0.1129	0.1129	0.0000	36.9527	36.9527	0.0365	0.0000	37.8643
Energy	0.0814	0.6978	0.3126	4.4400e-003		0.0562	0.0562		0.0562	0.0562		887.8611	887.8611	0.0170	0.0163	893.1372
Mobile	3.5330	15.9371	45.6649	0.1372	10.2470	0.1547	10.4017	2.7428	0.1454	2.8881		13,923.5421	13,923.5421	0.8072		13,943.7217
Total	**10.4731**	**16.8735**	**66.5917**	**0.1427**	**10.2470**	**0.3238**	**10.5708**	**2.7428**	**0.3144**	**3.0572**	**0.0000**	**14,848.3558**	**14,848.3558**	**0.8607**	**0.0163**	**14,874.7232**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	2.42	9.23	8.89	13.53	14.50	8.24	14.32	14.50	8.08	13.88	0.00	13.42	13.42	11.94	7.87	13.42

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/16/2018	5/16/2018	5	87	
2	Building Construction - Parking Garage	Building Construction	5/17/2018	12/17/2018	5	153	
3	Paving	Paving	6/1/2018	8/1/2018	5	44	
4	Building Construction - Residential	Building Construction	12/16/2018	6/12/2020	5	390	
5	Architectural Coating	Architectural Coating	3/15/2020	6/15/2020	5	66	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 87

Acres of Paving: 1.48

Residential Indoor: 560,457; Residential Outdoor: 186,819; Non-Residential Indoor: 11,213; Non-Residential Outdoor: 3,738; Striped Parking Area: 14,331 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Grading	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Scrapers	0	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction - Parking Garage	Cranes	0	7.00	231	0.29
Building Construction - Parking Garage	Forklifts	0	8.00	89	0.20
Building Construction - Parking Garage	Generator Sets	0	8.00	84	0.74
Building Construction - Parking Garage	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction - Parking Garage	Welders	0	8.00	46	0.45
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38
Building Construction - Residential	Cranes	1	6.00	231	0.29
Building Construction - Residential	Forklifts	2	8.00	89	0.20
Building Construction - Residential	Generator Sets	0	8.00	84	0.74
Building Construction - Residential	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Building Construction - Residential	Welders	1	4.00	46	0.45
Architectural Coating	Air Compressors	0	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	3	24.00	0.00	14,910.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Parking Garage	2	100.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Residential	4	182.00	30.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	56.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2155	0.0000	1.2155	0.1380	0.0000	0.1380			0.0000			0.0000
Off-Road	1.0081	11.5167	8.2868	0.0166		0.4809	0.4809		0.4424	0.4424		1,668.0326	1,668.0326	0.5193		1,681.0146
Total	**1.0081**	**11.5167**	**8.2868**	**0.0166**	**1.2155**	**0.4809**	**1.6964**	**0.1380**	**0.4424**	**0.5804**		**1,668.0326**	**1,668.0326**	**0.5193**		**1,681.0146**

3.2 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.7011	55.3665	11.4562	0.1389	53.4167	0.2106	53.6273	5.8493	0.2015	6.0508		15,006.2221	15,006.2221	1.0331		15,032.0483
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1326	0.1001	1.2962	3.0200e-003	5.4580	2.3900e-003	5.4604	0.5887	2.2100e-003	0.5909		300.8856	300.8856	0.0113		301.1677
Total	**1.8337**	**55.4666**	**12.7524**	**0.1419**	**58.8747**	**0.2130**	**59.0877**	**6.4380**	**0.2037**	**6.6417**		**15,307.1076**	**15,307.1076**	**1.0443**		**15,333.2160**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4741	0.0000	0.4741	0.0538	0.0000	0.0538			0.0000			0.0000
Off-Road	1.0081	11.5167	8.2868	0.0166		0.4809	0.4809		0.4424	0.4424	0.0000	1,668.0326	1,668.0326	0.5193		1,681.0146
Total	**1.0081**	**11.5167**	**8.2868**	**0.0166**	**0.4741**	**0.4809**	**0.9550**	**0.0538**	**0.4424**	**0.4962**	**0.0000**	**1,668.0326**	**1,668.0326**	**0.5193**		**1,681.0146**

3.2 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.7011	55.3665	11.4562	0.1389	15.0182	0.2106	15.2289	2.0160	0.2015	2.2175		15,006.2221	15,006.2221	1.0331		15,032.0483
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1326	0.1001	1.2962	3.0200e-003	1.5057	2.3900e-003	1.5081	0.1941	2.2100e-003	0.1963		300.8856	300.8856	0.0113		301.1677
Total	**1.8337**	**55.4666**	**12.7524**	**0.1419**	**16.5239**	**0.2130**	**16.7369**	**2.2101**	**0.2037**	**2.4138**		**15,307.1076**	**15,307.1076**	**1.0443**		**15,333.2160**

3.3 Building Construction - Parking Garage - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5322	5.2595	4.6734	6.2100e-003		0.3726	0.3726		0.3428	0.3428		625.5519	625.5519	0.1947		630.4205
Total	**0.5322**	**5.2595**	**4.6734**	**6.2100e-003**		**0.3726**	**0.3726**		**0.3428**	**0.3428**		**625.5519**	**625.5519**	**0.1947**		**630.4205**

3.3 Building Construction - Parking Garage - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1840	4.9024	1.3404	0.0106	8.3761	0.0346	8.4106	0.8835	0.0331	0.9165		1,126.717 7	1,126.717 7	0.0742		1,128.572 4
Worker	0.5525	0.4169	5.4007	0.0126	22.7417	9.9700e-003	22.7517	2.4528	9.1900e-003	2.4620		1,253.689 8	1,253.689 8	0.0470		1,254.865 4
Total	**0.7365**	**5.3193**	**6.7411**	**0.0232**	**31.1178**	**0.0445**	**31.1623**	**3.3363**	**0.0422**	**3.3785**		**2,380.407 5**	**2,380.407 5**	**0.1212**		**2,383.437 8**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5322	5.2595	4.6734	6.2100e-003		0.3726	0.3726		0.3428	0.3428	0.0000	625.5519	625.5519	0.1947		630.4205
Total	**0.5322**	**5.2595**	**4.6734**	**6.2100e-003**		**0.3726**	**0.3726**		**0.3428**	**0.3428**	**0.0000**	**625.5519**	**625.5519**	**0.1947**		**630.4205**

3.3 Building Construction - Parking Garage - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1840	4.9024	1.3404	0.0106	2.1922	0.0346	2.2267	0.2661	0.0331	0.2992		1,126.717 7	1,126.717 7	0.0742		1,128.572 4
Worker	0.5525	0.4169	5.4007	0.0126	6.2737	9.9700e-003	6.2836	0.8088	9.1900e-003	0.8180		1,253.689 8	1,253.689 8	0.0470		1,254.865 4
Total	**0.7365**	**5.3193**	**6.7411**	**0.0232**	**8.4658**	**0.0445**	**8.5103**	**1.0750**	**0.0422**	**1.1172**		**2,380.407 5**	**2,380.407 5**	**0.1212**		**2,383.437 8**

3.4 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8219	8.7605	7.3982	0.0114		0.4781	0.4781		0.4398	0.4398		1,147.044 4	1,147.044 4	0.3571		1,155.971 6
Paving	0.0881					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9100**	**8.7605**	**7.3982**	**0.0114**		**0.4781**	**0.4781**		**0.4398**	**0.4398**		**1,147.044 4**	**1,147.044 4**	**0.3571**		**1,155.971 6**

3.4 Paving - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.2000e-003	0.2451	0.0670	5.3000e-004	0.4188	1.7300e-003	0.4205	0.0442	1.6500e-003	0.0458		56.3359	56.3359	3.7100e-003		56.4286
Worker	0.0442	0.0334	0.4321	1.0100e-003	1.8193	8.0000e-004	1.8201	0.1962	7.4000e-004	0.1970		100.2952	100.2952	3.7600e-003		100.3892
Total	**0.0534**	**0.2785**	**0.4991**	**1.5400e-003**	**2.2381**	**2.5300e-003**	**2.2407**	**0.2404**	**2.3900e-003**	**0.2428**		**156.6311**	**156.6311**	**7.4700e-003**		**156.8179**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8219	8.7605	7.3982	0.0114		0.4781	0.4781		0.4398	0.4398	0.0000	1,147.0444	1,147.0444	0.3571		1,155.9716
Paving	0.0881					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9100**	**8.7605**	**7.3982**	**0.0114**		**0.4781**	**0.4781**		**0.4398**	**0.4398**	**0.0000**	**1,147.0444**	**1,147.0444**	**0.3571**		**1,155.9716**

3.4 Paving - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	9.2000e-003	0.2451	0.0670	5.3000e-004	0.1096	1.7300e-003	0.1113	0.0133	1.6500e-003	0.0150		56.3359	56.3359	3.7100e-003		56.4286
Worker	0.0442	0.0334	0.4321	1.0100e-003	0.5019	8.0000e-004	0.5027	0.0647	7.4000e-004	0.0654		100.2952	100.2952	3.7600e-003		100.3892
Total	**0.0534**	**0.2785**	**0.4991**	**1.5400e-003**	**0.6115**	**2.5300e-003**	**0.6140**	**0.0780**	**2.3900e-003**	**0.0804**		**156.6311**	**156.6311**	**7.4700e-003**		**156.8179**

3.5 Building Construction - Residential - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0052	9.1056	5.2434	8.6500e-003		0.5295	0.5295		0.4917	0.4917		846.7625	846.7625	0.2512		853.0427
Total	**1.0052**	**9.1056**	**5.2434**	**8.6500e-003**		**0.5295**	**0.5295**		**0.4917**	**0.4917**		**846.7625**	**846.7625**	**0.2512**		**853.0427**

3.5 Building Construction - Residential - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1380	3.6768	1.0053	7.9300e-003	6.2821	0.0259	6.3080	0.6626	0.0248	0.6874		845.0383	845.0383	0.0556		846.4293
Worker	1.0055	0.7588	9.8294	0.0229	41.3899	0.0181	41.4081	4.4641	0.0167	4.4809		2,281.7155	2,281.7155	0.0856		2,283.8550
Total	**1.1435**	**4.4356**	**10.8346**	**0.0309**	**47.6720**	**0.0441**	**47.7161**	**5.1267**	**0.0415**	**5.1682**		**3,126.7537**	**3,126.7537**	**0.1412**		**3,130.2843**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0052	9.1056	5.2434	8.6500e-003		0.5295	0.5295		0.4917	0.4917	0.0000	846.7625	846.7625	0.2512		853.0427
Total	**1.0052**	**9.1056**	**5.2434**	**8.6500e-003**		**0.5295**	**0.5295**		**0.4917**	**0.4917**	**0.0000**	**846.7625**	**846.7625**	**0.2512**		**853.0427**

3.5 Building Construction - Residential - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1380	3.6768	1.0053	7.9300e-003	1.6441	0.0259	1.6700	0.1996	0.0248	0.2244		845.0383	845.0383	0.0556		846.4293
Worker	1.0055	0.7588	9.8294	0.0229	11.4181	0.0181	11.4362	1.4721	0.0167	1.4888		2,281.7155	2,281.7155	0.0856		2,283.8550
Total	**1.1435**	**4.4356**	**10.8346**	**0.0309**	**13.0622**	**0.0441**	**13.1063**	**1.6717**	**0.0415**	**1.7132**		**3,126.7537**	**3,126.7537**	**0.1412**		**3,130.2843**

3.5 Building Construction - Residential - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8905	8.1740	5.0118	8.6600e-003		0.4621	0.4621		0.4291	0.4291		834.7876	834.7876	0.2486		841.0036
Total	**0.8905**	**8.1740**	**5.0118**	**8.6600e-003**		**0.4621**	**0.4621**		**0.4291**	**0.4291**		**834.7876**	**834.7876**	**0.2486**		**841.0036**

3.5 Building Construction - Residential - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1247	3.4719	0.9212	7.8400e-003	6.2821	0.0221	6.3042	0.6626	0.0212	0.6838		836.4439	836.4439	0.0536		837.7839
Worker	0.9092	0.6682	8.7754	0.0222	41.3899	0.0175	41.4075	4.4641	0.0162	4.4803		2,207.574 3	2,207.574 3	0.0758		2,209.469 9
Total	**1.0339**	**4.1401**	**9.6966**	**0.0300**	**47.6720**	**0.0397**	**47.7117**	**5.1267**	**0.0373**	**5.1641**		**3,044.018 1**	**3,044.018 1**	**0.1294**		**3,047.253 8**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8905	8.1740	5.0118	8.6600e-003		0.4621	0.4621		0.4291	0.4291	0.0000	834.7876	834.7876	0.2486		841.0036
Total	**0.8905**	**8.1740**	**5.0118**	**8.6600e-003**		**0.4621**	**0.4621**		**0.4291**	**0.4291**	**0.0000**	**834.7876**	**834.7876**	**0.2486**		**841.0036**

3.5 Building Construction - Residential - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1247	3.4719	0.9212	7.8400e-003	1.6441	0.0221	1.6663	0.1996	0.0212	0.2208		836.4439	836.4439	0.0536		837.7839
Worker	0.9092	0.6682	8.7754	0.0222	11.4181	0.0175	11.4356	1.4721	0.0162	1.4882		2,207.5743	2,207.5743	0.0758		2,209.4699
Total	**1.0339**	**4.1401**	**9.6966**	**0.0300**	**13.0622**	**0.0397**	**13.1019**	**1.6717**	**0.0373**	**1.7090**		**3,044.0181**	**3,044.0181**	**0.1294**		**3,047.2538**

3.5 Building Construction - Residential - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7991	7.4243	4.8306	8.6600e-003		0.4035	0.4035		0.3747	0.3747		818.8928	818.8928	0.2466		825.0585
Total	**0.7991**	**7.4243**	**4.8306**	**8.6600e-003**		**0.4035**	**0.4035**		**0.3747**	**0.3747**		**818.8928**	**818.8928**	**0.2466**		**825.0585**

3.5 Building Construction - Residential - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1067	3.1912	0.8361	7.7800e-003	6.2821	0.0150	6.2971	0.6626	0.0144	0.6770		831.0741	831.0741	0.0507		832.3420
Worker	0.8376	0.5959	7.9688	0.0215	41.3899	0.0170	41.4069	4.4641	0.0157	4.4798		2,140.5254	2,140.5254	0.0675		2,142.2126
Total	**0.9443**	**3.7870**	**8.8049**	**0.0293**	**47.6720**	**0.0320**	**47.7040**	**5.1267**	**0.0300**	**5.1568**		**2,971.5995**	**2,971.5995**	**0.1182**		**2,974.5545**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7991	7.4243	4.8306	8.6600e-003		0.4035	0.4035		0.3747	0.3747	0.0000	818.8928	818.8928	0.2466		825.0585
Total	**0.7991**	**7.4243**	**4.8306**	**8.6600e-003**		**0.4035**	**0.4035**		**0.3747**	**0.3747**	**0.0000**	**818.8928**	**818.8928**	**0.2466**		**825.0585**

3.5 Building Construction - Residential - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1067	3.1912	0.8361	7.7800e-003	1.6441	0.0150	1.6592	0.1996	0.0144	0.2140		831.0741	831.0741	0.0507		832.3420
Worker	0.8376	0.5959	7.9688	0.0215	11.4181	0.0170	11.4351	1.4721	0.0157	1.4877		2,140.5254	2,140.5254	0.0675		2,142.2126
Total	**0.9443**	**3.7870**	**8.8049**	**0.0293**	**13.0622**	**0.0320**	**13.0942**	**1.6717**	**0.0300**	**1.7017**		**2,971.5995**	**2,971.5995**	**0.1182**		**2,974.5545**

3.6 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.2960					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**28.2960**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.6 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.1100e-003	0.2127	0.0557	5.2000e-004	0.4188	1.0000e-003	0.4198	0.0442	9.6000e-004	0.0451		55.4049	55.4049	3.3800e-003		55.4895
Worker	0.2577	0.1833	2.4519	6.6100e-003	12.7354	5.2300e-003	12.7406	1.3736	4.8200e-003	1.3784		658.6232	658.6232	0.0208		659.1423
Total	**0.2648**	**0.3961**	**2.5077**	**7.1300e-003**	**13.1542**	**6.2300e-003**	**13.1604**	**1.4178**	**5.7800e-003**	**1.4235**		**714.0282**	**714.0282**	**0.0241**		**714.6318**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.2960					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**28.2960**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.6 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	7.1100e-003	0.2127	0.0557	5.2000e-004	0.1096	1.0000e-003	0.1106	0.0133	9.6000e-004	0.0143		55.4049	55.4049	3.3800e-003		55.4895
Worker	0.2577	0.1833	2.4519	6.6100e-003	3.5133	5.2300e-003	3.5185	0.4529	4.8200e-003	0.4578		658.6232	658.6232	0.0208		659.1423
Total	**0.2648**	**0.3961**	**2.5077**	**7.1300e-003**	**3.6229**	**6.2300e-003**	**3.6291**	**0.4663**	**5.7800e-003**	**0.4720**		**714.0282**	**714.0282**	**0.0241**		**714.6318**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Improve Destination Accessibility

Improve Pedestrian Network

Provide Traffic Calming Measures

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.5330	15.9371	45.6649	0.1372	10.2470	0.1547	10.4017	2.7428	0.1454	2.8881		13,923.54 21	13,923.54 21	0.8072		13,943.72 17
Unmitigated	3.7855	17.5927	52.1352	0.1591	11.9848	0.1789	12.1637	3.2079	0.1682	3.3761		16,149.54 99	16,149.54 99	0.9224		16,172.60 98

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,649.20	1,584.72	1453.28	5,508,449	4,709,724
Enclosed Parking with Elevator	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	1,649.20	1,584.72	1,453.28	5,508,449	4,709,724

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	52	39	9
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
User Defined Recreational	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925
Enclosed Parking with Elevator	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925
Health Club	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925
Parking Lot	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925
User Defined Recreational	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0814	0.6978	0.3126	4.4400e-003		0.0562	0.0562		0.0562	0.0562		887.8611	887.8611	0.0170	0.0163	893.1372
NaturalGas Unmitigated	0.0884	0.7575	0.3397	4.8200e-003		0.0610	0.0610		0.0610	0.0610		963.8155	963.8155	0.0185	0.0177	969.5430

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	7764.41	0.0837	0.7155	0.3045	4.5700e-003		0.0579	0.0579		0.0579	0.0579		913.4601	913.4601	0.0175	0.0168	918.8884
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	428.021	4.6200e-003	0.0420	0.0353	2.5000e-004		3.1900e-003	3.1900e-003		3.1900e-003	3.1900e-003		50.3554	50.3554	9.7000e-004	9.2000e-004	50.6546
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0884**	**0.7575**	**0.3397**	**4.8200e-003**		**0.0610**	**0.0610**		**0.0610**	**0.0610**		**963.8155**	**963.8155**	**0.0185**	**0.0177**	**969.5430**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	7.16193	0.0772	0.6600	0.2809	4.2100e-003		0.0534	0.0534		0.0534	0.0534		842.5798	842.5798	0.0162	0.0155	847.5868
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	0.384891	4.1500e-003	0.0377	0.0317	2.3000e-004		2.8700e-003	2.8700e-003		2.8700e-003	2.8700e-003		45.2813	45.2813	8.7000e-004	8.3000e-004	45.5504
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0814**	**0.6978**	**0.3126**	**4.4400e-003**		**0.0562**	**0.0562**		**0.0562**	**0.0562**		**887.8611**	**887.8611**	**0.0170**	**0.0163**	**893.1372**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.8587	0.2387	20.6143	1.0800e-003		0.1129	0.1129		0.1129	0.1129	0.0000	36.9527	36.9527	0.0365	0.0000	37.8643
Unmitigated	6.8587	0.2387	20.6143	1.0800e-003		0.1129	0.1129		0.1129	0.1129	0.0000	36.9527	36.9527	0.0365	0.0000	37.8643

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5117					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.7126					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6344	0.2387	20.6143	1.0800e-003		0.1129	0.1129		0.1129	0.1129		36.9527	36.9527	0.0365		37.8643
Total	**6.8587**	**0.2387**	**20.6143**	**1.0800e-003**		**0.1129**	**0.1129**		**0.1129**	**0.1129**	**0.0000**	**36.9527**	**36.9527**	**0.0365**	**0.0000**	**37.8643**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5117					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	5.7126					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.6344	0.2387	20.6143	1.0800e-003		0.1129	0.1129		0.1129	0.1129		36.9527	36.9527	0.0365		37.8643
Total	**6.8587**	**0.2387**	**20.6143**	**1.0800e-003**		**0.1129**	**0.1129**		**0.1129**	**0.1129**	**0.0000**	**36.9527**	**36.9527**	**0.0365**	**0.0000**	**37.8643**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Solana Torrance Residential Development

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	439.00	Space	0.00	174,475.00	0
Parking Lot	45.00	Space	1.48	64,383.00	0
Health Club	7.47	1000sqft	0.00	7,475.00	0
User Defined Recreational	18.97	User Defined Unit	18.97	0.00	0
Apartments Mid Rise	248.00	Dwelling Unit	4.23	276,769.00	722

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	636.97	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See Section 1.0 Project Characteristics. Operational year 2019 consistent with traffic report. CO2 Intensity factor adjusted for 2016 SCE Power Content Label assuming 28% renewables (636.97 lb/MWh).

Land Use - See 1.1 Land Usage. Apartments Mid Rise includes res floor area & building circulation. Health Club = the leasing office & community room. User Defined Recreational = preserved open space.

Construction Phase - See 3.0 Construction Detail. Based on applicant-provided schedule assumptions.

Off-road Equipment - Architectural Coating. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions. Small portable air compressors (0.75 HP) used for architectural coating will be battery-operated.

Off-road Equipment - Default CalEEMod values. See 3.0 Construction Detail.

Off-road Equipment - Building Construction - Parking Garage. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions.

Off-road Equipment - Building Construction - Residential. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions.

Off-road Equipment - Grading. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions.

Off-road Equipment - Paving. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions.

Trips and VMT - See 3.0 Construction Detail. Based on applicant-provided assumptions and default CalEEMod values.

On-road Fugitive Dust - Assumed 99% worker paved (0.15 miles/one-way trip unpaved), 98% vendor paved (0.14 miles/one-way trip unpaved), and 99% hauling paved (0.20 miles/one-way trip unpaved).

Demolition - No demolition would occur.

Grading - See 3.0 Construction Detail. 119,270 CY of export (120,915 CY cut - 1,646 CY fill = 119,270 CY). Assumed 1 acre/day x 87 days = 87 acres disturbed.

Architectural Coating - Default CalEEMod values.

Vehicle Trips - Default CalEEMod Apartments Mid Rise trip rates and project-specific weekday trip rates (KHR Associates 2017) are consistent. Default CalEEMod Saturday and Sunday trip rates used. Health Club and City Park will not generate trips (onsite amenities).

Vehicle Emission Factors - Default CalEEMod emission factors for 2019.

Vehicle Emission Factors - Default CalEEMod emission factors for 2019.

Vehicle Emission Factors - Default CalEEMod emission factors for 2019.

Road Dust - Default CalEEMod values.

Woodstoves - No woodstoves. No fireplaces.

Consumer Products - Default CalEEMod values.

Area Coating - Default CalEEMod values.

Landscape Equipment - Default CalEEMod values.

Energy Use - Default CalEEMod values.

Water And Wastewater - Assumed 100% Aerobic. All project indoor water demand included in Apartments Mid Rise (KHR 2018). Default CalEEMod values for outdoor water use.

Solid Waste - Default CalEEMod values.

Construction Off-road Equipment Mitigation - Water Exposed Area, Frequency: 3 times per day. Unpaved Road Mitigation, Vehicle Speed: 15 mph. Soil Stabilizer for Unpaved Roads (surrogate for watering 3x day): 61% reduction PM10 & PM2.5.

Mobile Land Use Mitigation - Project Setting: Suburban Center. Increase Density: 10 DU/acre. Improve Destination Accessibility: Distance to Job Center: 5 miles. Improve Pedestrian Network: Project Site and Connecting Off-Site. Traffic Calming: 25% streets/25% intersections.

Area Mitigation - No mitigation applied.

Energy Mitigation - Exceed Title 24 by 15%. Install High Efficiency Lighting: 40% Lighting Energy Reduction. Energy Efficient Appliances: All.

Water Mitigation - Apply Water Conservation Strategy: 20% reduction in indoor. No outdoor water reduction applied.

Waste Mitigation - Percent Reduction in Waste Disposed: 50%. Waste diversion consistent with Assembly Bill 939.

Operational Off-Road Equipment - No operationl off-road equipment.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	35.00	87.00
tblConstructionPhase	NumDays	370.00	153.00
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	370.00	390.00
tblConstructionPhase	NumDays	20.00	66.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	210.80	0.00
tblFireplaces	NumberNoFireplace	24.80	0.00
tblFireplaces	NumberWood	12.40	0.00
tblGrading	AcresOfGrading	0.00	87.00
tblGrading	MaterialExported	0.00	119,270.00
tblLandUse	LandUseSquareFeet	175,600.00	174,475.00
tblLandUse	LandUseSquareFeet	18,000.00	64,383.00
tblLandUse	LandUseSquareFeet	7,470.00	7,475.00
tblLandUse	LandUseSquareFeet	248,000.00	276,769.00
tblLandUse	LotAcreage	3.95	0.00
tblLandUse	LotAcreage	0.41	1.48
tblLandUse	LotAcreage	0.17	0.00

tblLandUse	LotAcreage	0.00	18.97
tblLandUse	LotAcreage	6.53	4.23
tblLandUse	Population	709.00	722.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOnRoadDust	HaulingPercentPave	100.00	99.00
tblOnRoadDust	HaulingPercentPave	100.00	99.00
tblOnRoadDust	HaulingPercentPave	100.00	99.00
tblOnRoadDust	HaulingPercentPave	100.00	99.00
tblOnRoadDust	HaulingPercentPave	100.00	99.00

tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	VendorPercentPave	100.00	98.00
tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblOnRoadDust	WorkerPercentPave	100.00	99.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	636.97
tblTripsAndVMT	HaulingTripNumber	14,909.00	14,910.00
tblTripsAndVMT	VendorTripNumber	67.00	40.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	67.00	30.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	8.00	24.00
tblTripsAndVMT	WorkerTripNumber	282.00	100.00
tblTripsAndVMT	WorkerTripNumber	282.00	182.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00

tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	16,158,198.35	32,150,660.00
tblWater	IndoorWaterUseRate	441,799.29	0.00
tblWater	OutdoorWaterUseRate	270,780.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	NumberCatalytic	12.40	0.00
tblWoodstoves	NumberNoncatalytic	12.40	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2549	4.0921	2.0415	9.5400e-003	4.8497	0.0759	4.9256	0.5286	0.0703	0.5989	0.0000	914.4490	914.4490	0.0936	0.0000	916.7881
2019	0.2518	1.6283	1.8588	4.9100e-003	5.6792	0.0655	5.7447	0.6141	0.0609	0.6750	0.0000	446.9117	446.9117	0.0446	0.0000	448.0260
2020	1.0457	0.6838	0.8569	2.4000e-003	2.9639	0.0259	2.9898	0.3206	0.0241	0.3447	0.0000	217.9886	217.9886	0.0202	0.0000	218.4923
Maximum	**1.0457**	**4.0921**	**2.0415**	**9.5400e-003**	**5.6792**	**0.0759**	**5.7447**	**0.6141**	**0.0703**	**0.6750**	**0.0000**	**914.4490**	**914.4490**	**0.0936**	**0.0000**	**916.7881**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.2549	4.0921	2.0415	9.5400e-003	1.3599	0.0759	1.4358	0.1797	0.0703	0.2501	0.0000	914.4489	914.4489	0.0936	0.0000	916.7880
2019	0.2518	1.6283	1.8588	4.9100e-003	1.5710	0.0655	1.6365	0.2040	0.0609	0.2649	0.0000	446.9116	446.9116	0.0446	0.0000	448.0259
2020	1.0457	0.6838	0.8569	2.4000e-003	0.8205	0.0259	0.8464	0.1066	0.0241	0.1307	0.0000	217.9885	217.9885	0.0202	0.0000	218.4923
Maximum	**1.0457**	**4.0921**	**2.0415**	**9.5400e-003**	**1.5710**	**0.0759**	**1.6365**	**0.2040**	**0.0703**	**0.2649**	**0.0000**	**914.4489**	**914.4489**	**0.0936**	**0.0000**	**916.7880**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**72.20**	**0.00**	**71.31**	**66.49**	**0.00**	**60.11**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-2-2018**	**4-1-2018**	1.9174	1.9174
2	**4-2-2018**	**7-1-2018**	1.4276	1.4276
3	**7-2-2018**	**10-1-2018**	0.5001	0.5001
4	**10-2-2018**	**1-1-2019**	0.4251	0.4251
5	**1-2-2019**	**4-1-2019**	0.4634	0.4634
6	**4-2-2019**	**7-1-2019**	0.4627	0.4627
7	**7-2-2019**	**10-1-2019**	0.4679	0.4679
8	**10-2-2019**	**1-1-2020**	0.4733	0.4733
9	**1-2-2020**	**4-1-2020**	0.6126	0.6126
10	**4-2-2020**	**7-1-2020**	1.1088	1.1088
		Highest	1.9174	1.9174

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.2152	0.0298	2.5768	1.4000e-004		0.0141	0.0141		0.0141	0.0141	0.0000	4.1904	4.1904	4.1400e-003	0.0000	4.2937
Energy	0.0161	0.1382	0.0620	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	764.5776	764.5776	0.0306	8.6200e-003	767.9128
Mobile	0.6413	3.2859	8.9466	0.0273	2.0909	0.0319	2.1228	0.5606	0.0300	0.5905	0.0000	2,513.6483	2,513.6483	0.1475	0.0000	2,517.3368
Waste						0.0000	0.0000		0.0000	0.0000	31.8006	0.0000	31.8006	1.8794	0.0000	78.7846
Water						0.0000	0.0000		0.0000	0.0000	11.3750	153.6525	165.0274	0.0462	0.0262	173.9840
Total	**1.8726**	**3.4540**	**11.5853**	**0.0283**	**2.0909**	**0.0571**	**2.1480**	**0.5606**	**0.0552**	**0.6158**	**43.1755**	**3,436.0687**	**3,479.2442**	**2.1078**	**0.0348**	**3,542.3118**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.2152	0.0298	2.5768	1.4000e-004		0.0141	0.0141		0.0141	0.0141	0.0000	4.1904	4.1904	4.1400e-003	0.0000	4.2937
Energy	0.0149	0.1273	0.0570	8.1000e-004		0.0103	0.0103		0.0103	0.0103	0.0000	650.5696	650.5696	0.0257	7.4400e-003	653.4299
Mobile	0.5971	2.9676	7.8731	0.0235	1.7877	0.0276	1.8153	0.4793	0.0259	0.5052	0.0000	2,167.1239	2,167.1239	0.1294	0.0000	2,170.3578
Waste						0.0000	0.0000		0.0000	0.0000	15.9003	0.0000	15.9003	0.9397	0.0000	39.3923
Water						0.0000	0.0000		0.0000	0.0000	9.1000	129.4617	138.5617	0.0372	0.0210	145.7527
Total	**1.8272**	**3.1248**	**10.5069**	**0.0245**	**1.7877**	**0.0519**	**1.8396**	**0.4793**	**0.0503**	**0.5296**	**25.0002**	**2,951.3456**	**2,976.3458**	**1.1361**	**0.0285**	**3,013.2264**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**2.43**	**9.53**	**9.31**	**13.53**	**14.50**	**9.09**	**14.36**	**14.50**	**8.93**	**14.00**	**42.10**	**14.11**	**14.45**	**46.10**	**18.25**	**14.94**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/16/2018	5/16/2018	5	87	
2	Building Construction - Parking Garage	Building Construction	5/17/2018	12/17/2018	5	153	
3	Paving	Paving	6/1/2018	8/1/2018	5	44	
4	Building Construction - Residential	Building Construction	12/16/2018	6/12/2020	5	390	
5	Architectural Coating	Architectural Coating	3/15/2020	6/15/2020	5	66	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 87

Acres of Paving: 1.48

Residential Indoor: 560,457; Residential Outdoor: 186,819; Non-Residential Indoor: 11,213; Non-Residential Outdoor: 3,738; Striped Parking Area: 14,331 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Grading	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Scrapers	0	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction - Parking Garage	Cranes	0	7.00	231	0.29
Building Construction - Parking Garage	Forklifts	0	8.00	89	0.20
Building Construction - Parking Garage	Generator Sets	0	8.00	84	0.74
Building Construction - Parking Garage	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction - Parking Garage	Welders	0	8.00	46	0.45
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38
Building Construction - Residential	Cranes	1	6.00	231	0.29
Building Construction - Residential	Forklifts	2	8.00	89	0.20
Building Construction - Residential	Generator Sets	0	8.00	84	0.74
Building Construction - Residential	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Building Construction - Residential	Welders	1	4.00	46	0.45
Architectural Coating	Air Compressors	0	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	3	24.00	0.00	14,910.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Parking Garage	2	100.00	40.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction - Residential	4	182.00	30.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	56.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0529	0.0000	0.0529	6.0000e-003	0.0000	6.0000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0439	0.5010	0.3605	7.2000e-004		0.0209	0.0209		0.0193	0.0193	0.0000	65.8248	65.8248	0.0205	0.0000	66.3371
Total	**0.0439**	**0.5010**	**0.3605**	**7.2000e-004**	**0.0529**	**0.0209**	**0.0738**	**6.0000e-003**	**0.0193**	**0.0253**	**0.0000**	**65.8248**	**65.8248**	**0.0205**	**0.0000**	**66.3371**

3.2 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0748	2.4898	0.5135	6.0000e-003	2.1230	9.2400e-003	2.1323	0.2341	8.8400e-003	0.2429	0.0000	588.0219	588.0219	0.0415	0.0000	589.0586
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.7900e-003	4.9500e-003	0.0532	1.3000e-004	0.2168	1.0000e-004	0.2169	0.0235	1.0000e-004	0.0236	0.0000	11.3670	11.3670	4.3000e-004	0.0000	11.3777
Total	**0.0806**	**2.4947**	**0.5668**	**6.1300e-003**	**2.3398**	**9.3400e-003**	**2.3492**	**0.2576**	**8.9400e-003**	**0.2666**	**0.0000**	**599.3889**	**599.3889**	**0.0419**	**0.0000**	**600.4363**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0206	0.0000	0.0206	2.3400e-003	0.0000	2.3400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0439	0.5010	0.3605	7.2000e-004		0.0209	0.0209		0.0193	0.0193	0.0000	65.8247	65.8247	0.0205	0.0000	66.3370
Total	**0.0439**	**0.5010**	**0.3605**	**7.2000e-004**	**0.0206**	**0.0209**	**0.0415**	**2.3400e-003**	**0.0193**	**0.0216**	**0.0000**	**65.8247**	**65.8247**	**0.0205**	**0.0000**	**66.3370**

3.2 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0748	2.4898	0.5135	6.0000e-003	0.6037	9.2400e-003	0.6130	0.0824	8.8400e-003	0.0913	0.0000	588.0219	588.0219	0.0415	0.0000	589.0586
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.7900e-003	4.9500e-003	0.0532	1.3000e-004	0.0604	1.0000e-004	0.0605	7.9000e-003	1.0000e-004	8.0000e-003	0.0000	11.3670	11.3670	4.3000e-004	0.0000	11.3777
Total	**0.0806**	**2.4947**	**0.5668**	**6.1300e-003**	**0.6641**	**9.3400e-003**	**0.6735**	**0.0903**	**8.9400e-003**	**0.0993**	**0.0000**	**599.3889**	**599.3889**	**0.0419**	**0.0000**	**600.4363**

3.3 Building Construction - Parking Garage - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0407	0.4024	0.3575	4.8000e-004		0.0285	0.0285		0.0262	0.0262	0.0000	43.4131	43.4131	0.0135	0.0000	43.7510
Total	**0.0407**	**0.4024**	**0.3575**	**4.8000e-004**		**0.0285**	**0.0285**		**0.0262**	**0.0262**	**0.0000**	**43.4131**	**43.4131**	**0.0135**	**0.0000**	**43.7510**

3.3 Building Construction - Parking Garage - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0143	0.3832	0.1077	8.0000e-004	0.5843	2.6600e-003	0.5869	0.0619	2.5500e-003	0.0645	0.0000	77.3159	77.3159	5.3000e-003	0.0000	77.4485
Worker	0.0424	0.0363	0.3900	9.2000e-004	1.5885	7.6000e-004	1.5892	0.1723	7.0000e-004	0.1730	0.0000	83.2928	83.2928	3.1300e-003	0.0000	83.3711
Total	**0.0567**	**0.4195**	**0.4978**	**1.7200e-003**	**2.1727**	**3.4200e-003**	**2.1762**	**0.2342**	**3.2500e-003**	**0.2375**	**0.0000**	**160.6087**	**160.6087**	**8.4300e-003**	**0.0000**	**160.8196**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0407	0.4024	0.3575	4.8000e-004		0.0285	0.0285		0.0262	0.0262	0.0000	43.4130	43.4130	0.0135	0.0000	43.7509
Total	**0.0407**	**0.4024**	**0.3575**	**4.8000e-004**		**0.0285**	**0.0285**		**0.0262**	**0.0262**	**0.0000**	**43.4130**	**43.4130**	**0.0135**	**0.0000**	**43.7509**

3.3 Building Construction - Parking Garage - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0143	0.3832	0.1077	8.0000e-004	0.1540	2.6600e-003	0.1566	0.0190	2.5500e-003	0.0215	0.0000	77.3159	77.3159	5.3000e-003	0.0000	77.4485
Worker	0.0424	0.0363	0.3900	9.2000e-004	0.4425	7.6000e-004	0.4433	0.0579	7.0000e-004	0.0586	0.0000	83.2928	83.2928	3.1300e-003	0.0000	83.3711
Total	**0.0567**	**0.4195**	**0.4978**	**1.7200e-003**	**0.5965**	**3.4200e-003**	**0.6000**	**0.0769**	**3.2500e-003**	**0.0801**	**0.0000**	**160.6087**	**160.6087**	**8.4300e-003**	**0.0000**	**160.8196**

3.4 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0181	0.1927	0.1628	2.5000e-004		0.0105	0.0105		9.6800e-003	9.6800e-003	0.0000	22.8928	22.8928	7.1300e-003	0.0000	23.0710
Paving	1.9400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0200**	**0.1927**	**0.1628**	**2.5000e-004**		**0.0105**	**0.0105**		**9.6800e-003**	**9.6800e-003**	**0.0000**	**22.8928**	**22.8928**	**7.1300e-003**	**0.0000**	**23.0710**

3.4 Paving - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1000e-004	5.5100e-003	1.5500e-003	1.0000e-005	8.4000e-003	4.0000e-005	8.4400e-003	8.9000e-004	4.0000e-005	9.3000e-004	0.0000	1.1117	1.1117	8.0000e-005	0.0000	1.1136
Worker	9.8000e-004	8.3000e-004	8.9700e-003	2.0000e-005	0.0365	2.0000e-005	0.0366	3.9600e-003	2.0000e-005	3.9800e-003	0.0000	1.9163	1.9163	7.0000e-005	0.0000	1.9181
Total	**1.1900e-003**	**6.3400e-003**	**0.0105**	**3.0000e-005**	**0.0449**	**6.0000e-005**	**0.0450**	**4.8500e-003**	**6.0000e-005**	**4.9100e-003**	**0.0000**	**3.0280**	**3.0280**	**1.5000e-004**	**0.0000**	**3.0317**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0181	0.1927	0.1628	2.5000e-004		0.0105	0.0105		9.6800e-003	9.6800e-003	0.0000	22.8928	22.8928	7.1300e-003	0.0000	23.0709
Paving	1.9400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0200**	**0.1927**	**0.1628**	**2.5000e-004**		**0.0105**	**0.0105**		**9.6800e-003**	**9.6800e-003**	**0.0000**	**22.8928**	**22.8928**	**7.1300e-003**	**0.0000**	**23.0709**

3.4 Paving - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.1000e-004	5.5100e-003	1.5500e-003	1.0000e-005	2.2100e-003	4.0000e-005	2.2500e-003	2.7000e-004	4.0000e-005	3.1000e-004	0.0000	1.1117	1.1117	8.0000e-005	0.0000	1.1136
Worker	9.8000e-004	8.3000e-004	8.9700e-003	2.0000e-005	0.0102	2.0000e-005	0.0102	1.3300e-003	2.0000e-005	1.3500e-003	0.0000	1.9163	1.9163	7.0000e-005	0.0000	1.9181
Total	**1.1900e-003**	**6.3400e-003**	**0.0105**	**3.0000e-005**	**0.0124**	**6.0000e-005**	**0.0125**	**1.6000e-003**	**6.0000e-005**	**1.6600e-003**	**0.0000**	**3.0280**	**3.0280**	**1.5000e-004**	**0.0000**	**3.0317**

3.5 Building Construction - Residential - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.5300e-003	0.0501	0.0288	5.0000e-005		2.9100e-003	2.9100e-003		2.7000e-003	2.7000e-003	0.0000	4.2249	4.2249	1.2500e-003	0.0000	4.2563
Total	**5.5300e-003**	**0.0501**	**0.0288**	**5.0000e-005**		**2.9100e-003**	**2.9100e-003**		**2.7000e-003**	**2.7000e-003**	**0.0000**	**4.2249**	**4.2249**	**1.2500e-003**	**0.0000**	**4.2563**

3.5 Building Construction - Residential - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.7000e-004	0.0207	5.8100e-003	4.0000e-005	0.0315	1.4000e-004	0.0317	3.3400e-003	1.4000e-004	3.4800e-003	0.0000	4.1690	4.1690	2.9000e-004	0.0000	4.1761
Worker	5.5500e-003	4.7400e-003	0.0510	1.2000e-004	0.2079	1.0000e-004	0.2080	0.0226	9.0000e-005	0.0226	0.0000	10.8988	10.8988	4.1000e-004	0.0000	10.9091
Total	**6.3200e-003**	**0.0254**	**0.0568**	**1.6000e-004**	**0.2394**	**2.4000e-004**	**0.2396**	**0.0259**	**2.3000e-004**	**0.0261**	**0.0000**	**15.0678**	**15.0678**	**7.0000e-004**	**0.0000**	**15.0852**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.5300e-003	0.0501	0.0288	5.0000e-005		2.9100e-003	2.9100e-003		2.7000e-003	2.7000e-003	0.0000	4.2249	4.2249	1.2500e-003	0.0000	4.2563
Total	**5.5300e-003**	**0.0501**	**0.0288**	**5.0000e-005**		**2.9100e-003**	**2.9100e-003**		**2.7000e-003**	**2.7000e-003**	**0.0000**	**4.2249**	**4.2249**	**1.2500e-003**	**0.0000**	**4.2563**

3.5 Building Construction - Residential - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.7000e-004	0.0207	5.8100e-003	4.0000e-005	8.3000e-003	1.4000e-004	8.4500e-003	1.0200e-003	1.4000e-004	1.1600e-003	0.0000	4.1690	4.1690	2.9000e-004	0.0000	4.1761
Worker	5.5500e-003	4.7400e-003	0.0510	1.2000e-004	0.0579	1.0000e-004	0.0580	7.5800e-003	9.0000e-005	7.6700e-003	0.0000	10.8988	10.8988	4.1000e-004	0.0000	10.9091
Total	**6.3200e-003**	**0.0254**	**0.0568**	**1.6000e-004**	**0.0662**	**2.4000e-004**	**0.0665**	**8.6000e-003**	**2.3000e-004**	**8.8300e-003**	**0.0000**	**15.0678**	**15.0678**	**7.0000e-004**	**0.0000**	**15.0852**

3.5 Building Construction - Residential - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1162	1.0667	0.6540	1.1300e-003		0.0603	0.0603		0.0560	0.0560	0.0000	98.8285	98.8285	0.0294	0.0000	99.5644
Total	**0.1162**	**1.0667**	**0.6540**	**1.1300e-003**		**0.0603**	**0.0603**		**0.0560**	**0.0560**	**0.0000**	**98.8285**	**98.8285**	**0.0294**	**0.0000**	**99.5644**

3.5 Building Construction - Residential - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0166	0.4624	0.1265	1.0100e-003	0.7475	2.9100e-003	0.7504	0.0792	2.7800e-003	0.0820	0.0000	97.9003	97.9003	6.5300e-003	0.0000	98.0636
Worker	0.1190	0.0992	1.0783	2.7700e-003	4.9317	2.2900e-003	4.9340	0.5349	2.1100e-003	0.5371	0.0000	250.1829	250.1829	8.6000e-003	0.0000	250.3980
Total	**0.1355**	**0.5616**	**1.2048**	**3.7800e-003**	**5.6792**	**5.2000e-003**	**5.6844**	**0.6141**	**4.8900e-003**	**0.6190**	**0.0000**	**348.0832**	**348.0832**	**0.0151**	**0.0000**	**348.4616**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1162	1.0667	0.6540	1.1300e-003		0.0603	0.0603		0.0560	0.0560	0.0000	98.8284	98.8284	0.0294	0.0000	99.5643
Total	**0.1162**	**1.0667**	**0.6540**	**1.1300e-003**		**0.0603**	**0.0603**		**0.0560**	**0.0560**	**0.0000**	**98.8284**	**98.8284**	**0.0294**	**0.0000**	**99.5643**

3.5 Building Construction - Residential - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0166	0.4624	0.1265	1.0100e-003	0.1970	2.9100e-003	0.1999	0.0242	2.7800e-003	0.0270	0.0000	97.9003	97.9003	6.5300e-003	0.0000	98.0636
Worker	0.1190	0.0992	1.0783	2.7700e-003	1.3740	2.2900e-003	1.3763	0.1798	2.1100e-003	0.1819	0.0000	250.1829	250.1829	8.6000e-003	0.0000	250.3980
Total	**0.1355**	**0.5616**	**1.2048**	**3.7800e-003**	**1.5710**	**5.2000e-003**	**1.5762**	**0.2040**	**4.8900e-003**	**0.2089**	**0.0000**	**348.0832**	**348.0832**	**0.0151**	**0.0000**	**348.4616**

3.5 Building Construction - Residential - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0472	0.4380	0.2850	5.1000e-004		0.0238	0.0238		0.0221	0.0221	0.0000	43.8303	43.8303	0.0132	0.0000	44.1604
Total	**0.0472**	**0.4380**	**0.2850**	**5.1000e-004**		**0.0238**	**0.0238**		**0.0221**	**0.0221**	**0.0000**	**43.8303**	**43.8303**	**0.0132**	**0.0000**	**44.1604**

3.5 Building Construction - Residential - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.4200e-003	0.1918	0.0519	4.5000e-004	0.3380	8.9000e-004	0.3389	0.0358	8.5000e-004	0.0367	0.0000	43.9714	43.9714	2.7900e-003	0.0000	44.0413
Worker	0.0496	0.0400	0.4420	1.2100e-003	2.2296	1.0000e-003	2.2307	0.2419	9.2000e-004	0.2428	0.0000	109.6726	109.6726	3.4600e-003	0.0000	109.7590
Total	**0.0560**	**0.2318**	**0.4939**	**1.6600e-003**	**2.5676**	**1.8900e-003**	**2.5695**	**0.2777**	**1.7700e-003**	**0.2794**	**0.0000**	**153.6441**	**153.6441**	**6.2500e-003**	**0.0000**	**153.8003**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0472	0.4380	0.2850	5.1000e-004		0.0238	0.0238		0.0221	0.0221	0.0000	43.8303	43.8303	0.0132	0.0000	44.1603
Total	**0.0472**	**0.4380**	**0.2850**	**5.1000e-004**		**0.0238**	**0.0238**		**0.0221**	**0.0221**	**0.0000**	**43.8303**	**43.8303**	**0.0132**	**0.0000**	**44.1603**

3.5 Building Construction - Residential - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.4200e-003	0.1918	0.0519	4.5000e-004	0.0891	8.9000e-004	0.0900	0.0110	8.5000e-004	0.0118	0.0000	43.9714	43.9714	2.7900e-003	0.0000	44.0413
Worker	0.0496	0.0400	0.4420	1.2100e-003	0.6212	1.0000e-003	0.6222	0.0813	9.2000e-004	0.0822	0.0000	109.6726	109.6726	3.4600e-003	0.0000	109.7590
Total	**0.0560**	**0.2318**	**0.4939**	**1.6600e-003**	**0.7102**	**1.8900e-003**	**0.7122**	**0.0922**	**1.7700e-003**	**0.0940**	**0.0000**	**153.6441**	**153.6441**	**6.2500e-003**	**0.0000**	**153.8003**

3.6 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.9338					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.9338**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.4000e-004	7.1500e-003	1.9400e-003	2.0000e-005	0.0126	3.0000e-005	0.0126	1.3400e-003	3.0000e-005	1.3700e-003	0.0000	1.6396	1.6396	1.0000e-004	0.0000	1.6422
Worker	8.5300e-003	6.8800e-003	0.0761	2.1000e-004	0.3837	1.7000e-004	0.3839	0.0416	1.6000e-004	0.0418	0.0000	18.8746	18.8746	5.9000e-004	0.0000	18.8894
Total	**8.7700e-003**	**0.0140**	**0.0780**	**2.3000e-004**	**0.3963**	**2.0000e-004**	**0.3965**	**0.0430**	**1.9000e-004**	**0.0432**	**0.0000**	**20.5142**	**20.5142**	**6.9000e-004**	**0.0000**	**20.5317**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.9338					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.9338**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.4000e-004	7.1500e-003	1.9400e-003	2.0000e-005	3.3200e-003	3.0000e-005	3.3500e-003	4.1000e-004	3.0000e-005	4.4000e-004	0.0000	1.6396	1.6396	1.0000e-004	0.0000	1.6422
Worker	8.5300e-003	6.8800e-003	0.0761	2.1000e-004	0.1069	1.7000e-004	0.1071	0.0140	1.6000e-004	0.0142	0.0000	18.8746	18.8746	5.9000e-004	0.0000	18.8894
Total	**8.7700e-003**	**0.0140**	**0.0780**	**2.3000e-004**	**0.1102**	**2.0000e-004**	**0.1104**	**0.0144**	**1.9000e-004**	**0.0146**	**0.0000**	**20.5142**	**20.5142**	**6.9000e-004**	**0.0000**	**20.5317**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Improve Destination Accessibility

Improve Pedestrian Network

Provide Traffic Calming Measures

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5971	2.9676	7.8731	0.0235	1.7877	0.0276	1.8153	0.4793	0.0259	0.5052	0.0000	2,167.1239	2,167.1239	0.1294	0.0000	2,170.3578
Unmitigated	0.6413	3.2859	8.9466	0.0273	2.0909	0.0319	2.1228	0.5606	0.0300	0.5905	0.0000	2,513.6483	2,513.6483	0.1475	0.0000	2,517.3368

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,649.20	1,584.72	1453.28	5,508,449	4,709,724
Enclosed Parking with Elevator	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	1,649.20	1,584.72	1,453.28	5,508,449	4,709,724

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	52	39	9
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
User Defined Recreational	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925
Enclosed Parking with Elevator	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925
Health Club	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925
Parking Lot	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925
User Defined Recreational	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	503.5743	503.5743	0.0229	4.7400e-003	505.5610
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	605.0072	605.0072	0.0275	5.7000e-003	607.3941
NaturalGas Mitigated	0.0149	0.1273	0.0570	8.1000e-004		0.0103	0.0103		0.0103	0.0103	0.0000	146.9954	146.9954	2.8200e-003	2.6900e-003	147.8689
NaturalGas Unmitigated	0.0161	0.1382	0.0620	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	159.5705	159.5705	3.0600e-003	2.9300e-003	160.5187

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.83401e+006	0.0153	0.1306	0.0556	8.3000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	151.2336	151.2336	2.9000e-003	2.7700e-003	152.1323
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	156228	8.4000e-004	7.6600e-003	6.4300e-003	5.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004	0.0000	8.3369	8.3369	1.6000e-004	1.5000e-004	8.3864
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0161**	**0.1383**	**0.0620**	**8.8000e-004**		**0.0111**	**0.0111**		**0.0111**	**0.0111**	**0.0000**	**159.5705**	**159.5705**	**3.0600e-003**	**2.9200e-003**	**160.5187**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.6141e+006	0.0141	0.1205	0.0513	7.7000e-004		9.7400e-003	9.7400e-003		9.7400e-003	9.7400e-003	0.0000	139.4985	139.4985	2.6700e-003	2.5600e-003	140.3275
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	140485	7.6000e-004	6.8900e-003	5.7800e-003	4.0000e-005		5.2000e-004	5.2000e-004		5.2000e-004	5.2000e-004	0.0000	7.4968	7.4968	1.4000e-004	1.4000e-004	7.5414
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0149**	**0.1273**	**0.0570**	**8.1000e-004**		**0.0103**	**0.0103**		**0.0103**	**0.0103**	**0.0000**	**146.9954**	**146.9954**	**2.8100e-003**	**2.7000e-003**	**147.8689**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	985874	284.8435	0.0130	2.6800e-003	285.9673
Enclosed Parking with Elevator	1.02242e+006	295.4034	0.0135	2.7800e-003	296.5689
Health Club	63163.7	18.2496	8.3000e-004	1.7000e-004	18.3216
Parking Lot	22534	6.5106	3.0000e-004	6.0000e-005	6.5363
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**605.0072**	**0.0276**	**5.6900e-003**	**607.3940**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	879309	254.0542	0.0116	2.3900e-003	255.0565
Enclosed Parking with Elevator	797700	230.4752	0.0105	2.1700e-003	231.3845
Health Club	52396	15.1385	6.9000e-004	1.4000e-004	15.1982
Parking Lot	13520.4	3.9064	1.8000e-004	4.0000e-005	3.9218
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**503.5743**	**0.0229**	**4.7400e-003**	**505.5610**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.2152	0.0298	2.5768	1.4000e-004		0.0141	0.0141		0.0141	0.0141	0.0000	4.1904	4.1904	4.1400e-003	0.0000	4.2937
Unmitigated	1.2152	0.0298	2.5768	1.4000e-004		0.0141	0.0141		0.0141	0.0141	0.0000	4.1904	4.1904	4.1400e-003	0.0000	4.2937

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0934					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0426					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0793	0.0298	2.5768	1.4000e-004		0.0141	0.0141		0.0141	0.0141	0.0000	4.1904	4.1904	4.1400e-003	0.0000	4.2937
Total	**1.2152**	**0.0298**	**2.5768**	**1.4000e-004**		**0.0141**	**0.0141**		**0.0141**	**0.0141**	**0.0000**	**4.1904**	**4.1904**	**4.1400e-003**	**0.0000**	**4.2937**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0934					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0426					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0793	0.0298	2.5768	1.4000e-004		0.0141	0.0141		0.0141	0.0141	0.0000	4.1904	4.1904	4.1400e-003	0.0000	4.2937
Total	**1.2152**	**0.0298**	**2.5768**	**1.4000e-004**		**0.0141**	**0.0141**		**0.0141**	**0.0141**	**0.0000**	**4.1904**	**4.1904**	**4.1400e-003**	**0.0000**	**4.2937**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	138.5617	0.0372	0.0210	145.7527
Unmitigated	165.0274	0.0462	0.0262	173.9840

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	32.1507 / 10.1867	165.0274	0.0462	0.0262	173.9840
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**165.0274**	**0.0462**	**0.0262**	**173.9840**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	25.7205 / 10.1867	138.5617	0.0372	0.0210	145.7527
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**138.5617**	**0.0372**	**0.0210**	**145.7527**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	15.9003	0.9397	0.0000	39.3923
Unmitigated	31.8006	1.8794	0.0000	78.7846

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	114.08	23.1572	1.3686	0.0000	57.3710
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Health Club	42.58	8.6434	0.5108	0.0000	21.4136
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**31.8006**	**1.8794**	**0.0000**	**78.7846**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	57.04	11.5786	0.6843	0.0000	28.6855
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Health Club	21.29	4.3217	0.2554	0.0000	10.7068
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**15.9003**	**0.9397**	**0.0000**	**39.3923**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Solana Torrance Residential Development

Los Angeles-South Coast County, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction - Parking Garage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction - Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Air Compressors	Diesel	No Change	0	0	No Change	0.00
Cranes	Diesel	No Change	0	1	No Change	0.00
Excavators	Diesel	No Change	0	2	No Change	0.00
Forklifts	Diesel	No Change	0	2	No Change	0.00
Generator Sets	Diesel	No Change	0	0	No Change	0.00
Graders	Diesel	No Change	0	0	No Change	0.00
Pavers	Diesel	No Change	0	1	No Change	0.00
Paving Equipment	Diesel	No Change	0	1	No Change	0.00
Rollers	Diesel	No Change	0	1	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	0	No Change	0.00
Rubber Tired Loaders	Diesel	No Change	0	1	No Change	0.00
Scrapers	Diesel	No Change	0	0	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	2	No Change	0.00
Welders	Diesel	No Change	0	1	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Cranes	7.17500E-002	8.54650E-001	3.28440E-001	8.40000E-004	3.59800E-002	3.31000E-002	0.00000E+000	7.53223E+001	7.53223E+001	2.39800E-002	0.00000E+000	7.59218E+001
Excavators	2.51600E-002	2.69340E-001	2.84980E-001	4.50000E-004	1.30600E-002	1.20200E-002	0.00000E+000	4.10083E+001	4.10083E+001	1.27700E-002	0.00000E+000	4.13275E+001
Forklifts	6.07000E-002	5.43210E-001	4.64280E-001	6.00000E-004	4.16700E-002	3.83300E-002	0.00000E+000	5.32100E+001	5.32100E+001	1.69400E-002	0.00000E+000	5.36334E+001
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Pavers	7.18000E-003	7.93900E-002	6.43900E-002	1.00000E-004	3.88000E-003	3.57000E-003	0.00000E+000	9.44282E+000	9.44282E+000	2.94000E-003	0.00000E+000	9.51631E+000
Paving Equipment	5.23000E-003	5.84900E-002	5.58000E-002	9.00000E-005	2.86000E-003	2.63000E-003	0.00000E+000	8.18291E+000	8.18291E+000	2.55000E-003	0.00000E+000	8.24659E+000
Rollers	5.67000E-003	5.48600E-002	4.25800E-002	6.00000E-005	3.77000E-003	3.47000E-003	0.00000E+000	5.26706E+000	5.26706E+000	1.64000E-003	0.00000E+000	5.30805E+000
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Rubber Tired Loaders	1.87000E-002	2.31630E-001	7.54900E-002	2.70000E-004	7.86000E-003	7.23000E-003	0.00000E+000	2.48165E+001	2.48165E+001	7.73000E-003	0.00000E+000	2.50097E+001
Scrapers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	4.07100E-002	4.02350E-001	3.57520E-001	4.80000E-004	2.85000E-002	2.62200E-002	0.00000E+000	4.34131E+001	4.34131E+001	1.35200E-002	0.00000E+000	4.37510E+001
Welders	3.64400E-002	1.56960E-001	1.75160E-001	2.50000E-004	9.38000E-003	9.38000E-003	0.00000E+000	1.83515E+001	1.83515E+001	2.97000E-003	0.00000E+000	1.84258E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Cranes	7.17500E-002	8.54640E-001	3.28440E-001	8.40000E-004	3.59800E-002	3.31000E-002	0.00000E+000	7.53222E+001	7.53222E+001	2.39800E-002	0.00000E+000	7.59217E+001
Excavators	2.51600E-002	2.69340E-001	2.84980E-001	4.50000E-004	1.30600E-002	1.20200E-002	0.00000E+000	4.10082E+001	4.10082E+001	1.27700E-002	0.00000E+000	4.13274E+001
Forklifts	6.07000E-002	5.43210E-001	4.64280E-001	6.00000E-004	4.16700E-002	3.83300E-002	0.00000E+000	5.32099E+001	5.32099E+001	1.69400E-002	0.00000E+000	5.36334E+001
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Pavers	7.18000E-003	7.93900E-002	6.43900E-002	1.00000E-004	3.88000E-003	3.57000E-003	0.00000E+000	9.44281E+000	9.44281E+000	2.94000E-003	0.00000E+000	9.51630E+000
Paving Equipment	5.23000E-003	5.84900E-002	5.57900E-002	9.00000E-005	2.86000E-003	2.63000E-003	0.00000E+000	8.18290E+000	8.18290E+000	2.55000E-003	0.00000E+000	8.24659E+000
Rollers	5.67000E-003	5.48600E-002	4.25800E-002	6.00000E-005	3.77000E-003	3.47000E-003	0.00000E+000	5.26705E+000	5.26705E+000	1.64000E-003	0.00000E+000	5.30805E+000
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Rubber Tired Loaders	1.87000E-002	2.31630E-001	7.54900E-002	2.70000E-004	7.86000E-003	7.23000E-003	0.00000E+000	2.48165E+001	2.48165E+001	7.73000E-003	0.00000E+000	2.50096E+001
Scrapers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	4.07100E-002	4.02350E-001	3.57520E-001	4.80000E-004	2.85000E-002	2.62200E-002	0.00000E+000	4.34130E+001	4.34130E+001	1.35200E-002	0.00000E+000	4.37509E+001
Welders	3.64400E-002	1.56960E-001	1.75160E-001	2.50000E-004	9.38000E-003	9.38000E-003	0.00000E+000	1.83515E+001	1.83515E+001	2.97000E-003	0.00000E+000	1.84258E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Cranes	0.00000E+000	1.17007E-005	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.19486E-006	1.19486E-006	0.00000E+000	0.00000E+000	1.18543E-006
Excavators	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.21927E-006	1.21927E-006	0.00000E+000	0.00000E+000	1.20985E-006
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.31554E-006	1.31554E-006	0.00000E+000	0.00000E+000	1.11871E-006
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Pavers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.05901E-006	1.05901E-006	0.00000E+000	0.00000E+000	1.05083E-006
Paving Equipment	0.00000E+000	0.00000E+000	1.79211E-004	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.22206E-006	1.22206E-006	0.00000E+000	0.00000E+000	0.00000E+000
Rollers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.89859E-006	1.89859E-006	0.00000E+000	0.00000E+000	0.00000E+000
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Rubber Tired Loaders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.20887E-006	1.20887E-006	0.00000E+000	0.00000E+000	1.19954E-006
Scrapers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.15173E-006	1.15173E-006	0.00000E+000	0.00000E+000	1.14283E-006
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.08983E-006	1.08983E-006	0.00000E+000	0.00000E+000	1.62815E-006

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
Yes	Soil Stabilizer for unpaved Roads	PM10 Reduction	61.00	PM2.5 Reduction	61.00		
No	Replace Ground Cover of Area Disturbed	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
Yes	Water Exposed Area	PM10 Reduction	61.00	PM2.5 Reduction	61.00	Frequency (per day)	3.00

No	Unpaved Road Mitigation	Moisture Content %	0.50	Vehicle Speed (mph)	15.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Architectural Coating	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	Roads	0.40	0.04	0.11	0.01	0.72	0.66
Building Construction - Parking Garage	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction - Parking Garage	Roads	2.17	0.23	0.60	0.08	0.73	0.67
Building Construction - Residential	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction - Residential	Roads	8.49	0.92	2.35	0.30	0.72	0.67
Grading	Fugitive Dust	0.05	0.01	0.02	0.00	0.61	0.61
Grading	Roads	2.34	0.26	0.66	0.09	0.72	0.65
Paving	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Roads	0.04	0.00	0.01	0.00	0.72	0.67

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
						Percent Reduction						
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.77	16.77	16.77	16.70	16.77
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	6.89	9.69	12.00	13.78	13.52	13.52	0.00	13.79	13.79	12.32	0.00	13.78
Natural Gas	7.82	7.89	8.00	7.95	7.90	7.90	0.00	7.88	7.88	8.17	7.53	7.88
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	20.00	15.74	16.04	19.35	19.75	16.23
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting: Suburban Center

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value 3
Yes	Land Use	Increase Density	0.00	10.00	0.00	
No	Land Use	Increase Diversity	0.10	0.32		
No	Land Use	Improve Walkability Design	0.00	0.00		
Yes	Land Use	Improve Destination Accessibility	0.12	5.00		
No	Land Use	Increase Transit Accessibility	0.25	0.00		
No	Land Use	Integrate Below Market Rate Housing	0.00	0.00		
	Land Use	Land Use SubTotal	0.10			

Yes	Neighborhood Enhancements	Improve Pedestrian Network	2.00	Project Site and Connecting Off-Site		
Yes	Neighborhood Enhancements	Provide Traffic Calming Measures	0.25	25.00	25.00	
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.05			
No	Parking Policy Pricing	Limit Parking Supply	0.00	0.00		
No	Parking Policy Pricing	Unbundle Parking Costs	0.00	0.00		
No	Parking Policy Pricing	On-street Market Pricing	0.00	0.00		
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00	0.00		
No	Transit Improvements	Expand Transit Network	0.00	0.00		
No	Transit Improvements	Increase Transit Frequency	0.00		0.00	
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.15			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"	4.50			
No	Commute	Workplace Parking Charge		0.00		
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program	10.00			
	Commute	Commute Subtotal	0.00			

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.15			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	50.00
No	Use Low VOC Paint (Residential Exterior)	50.00
No	Use Low VOC Paint (Non-residential Interior)	100.00
No	Use Low VOC Paint (Non-residential Exterior)	100.00
No	Use Low VOC Paint (Parking)	100.00
No	% Electric Lawnmower	0.00
No	% Electric Leafblower	0.00
No	% Electric Chainsaw	0.00

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
Yes	Exceed Title 24	15.00	
Yes	Install High Efficiency Lighting	40.00	
No	On-site Renewable	0.00	0.00

Appliance Type	Land Use Subtype	% Improvement
ClothWasher	Apartments Mid Rise	30.00
DishWasher	Apartments Mid Rise	15.00
Fan	Apartments Mid Rise	50.00
Refrigerator	Apartments Mid Rise	15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
Yes	Apply Water Conservation on Strategy	20.00	0.00
No	Use Reclaimed Water	0.00	0.00
No	Use Grey Water	0.00	
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction	100.00	
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape	0.00	0.00

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	50.00

Solana Torrance Residential Project
Fugitive Dust Generated by 10% Soil Excavation Buffer

Material Handling Fugitive Dust

Equations:

E = k*(0.0032)*(((U/5)^1.3)/((M/2)^1.4))*TP

Where:

E = Particulate emissions (in pounds) from truck loading/unloading

k = particle size multiplier; AP-42 default value is 0.35 for PM10 and 0.053 for PM2.5

U = mean wind speed (mph); default for LA County is 2.2 meter/sec = 4.9 mph

M = material moisture content; CalEEMod uses 12% (moisture content of cover) as default

TP = material throughput (tons)

Emissions Calculations:

Material Loading/Unloading

Grading

Duration (days)		Total CY	Total tonnage
	87	11,927	15,077.71
Daily PM10 Emissions (lbs/day)		0.015	
Daily PM2.5 Emissions (lbs/day)		0.002	

Quantification of Residential EV Charging Space Benefit - Solana Torrance Project

SCE Electricity Emission Factor[1]	0.32	MT CO_2e/MWh
Fuel Economy of Electric Vehicle[2]	0.25	kWh/mile
Electric Vehicle GHG Emissions	79.89	g/mile
Weighted Average GHG Emissions for VMT in CalEEMod - LA County[3]	434.58	g/mile
GHG Emissions Reduction from Additional EVs, per Mile	355	g/mile
Project Average Annual Traffic VMT (from CalEEMod)	4,709,724	miles/year
Project VMT that is Displaced by EVs (Based on 5% of Parking)	235,486	miles/year
GHG Emissions Reduction[4]	83.53	MT CO_2e/year

Notes:

1. CO2e weighted intensity factor for SCE accounts for CO_2, CH_4, and N_2O emission rates consistent with 2016 Power Content Label.

2. US Department of Energy. 2013. Benefits and Considerations of Electricity as a Vehicle Fuel. https://www.afdc.energy.gov/fuels/electricity_benefits.html. Accessed October 2018.

3. California Air Resources Board. 2015. EMFAC 2014. Running exhaust emission rate for CO_2 for all vehicle types in LA County (South Coast Air Basin), aggregated for all models and speeds, averaged over all seasons for 2019. To ensure that the project's emission reduction benefit doesn't take credit for electric vehicles that EMFAC 2014 already forecasts will be part of the vehicle fleet, the emissions factor includes the existing electric vehicles. https://www.arb.ca.gov/emfac/. Accessed October 2018.

4. GHG reduction calculated using annual VMT reduction assuming 5% parking electric vehicle charging spaces, fuel economy of electric vehicles, along with SCE electricity intensity emission factor, and the difference of GHG emissions of gasoline and diesel vehicles versus GHG emissions of electric vehicles.

Conversion Factors:

1	MWh =	1000	kWh
1	MT =	1000000	grams

EMFAC 2014 Factors - Solana Torrance Project

EMFAC2014 (v1.0.7) Emission Rates
Region Type: Sub-Area
Region: Los Angeles (SC)
Calendar Year: 2019
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day

Region	CalYr	VehClass	MdlYr	Speed	Fuel	Population	VMT	Trips	CO2_RUNE	CO2_IDLE	CO2_STRE
Los Angele	2019	HHDT	Aggregate	Aggregate	GAS	487.5332	66102.52	9754.564	1763.971	0	145.9157
Los Angele	2019	HHDT	Aggregate	Aggregate	DSL	48255.01	6496768	0	1702.245	12369.61	0
Los Angele	2019	LDA	Aggregate	Aggregate	GAS	3596018	1.23E+08	22645130	314.2234	0	64.73029
Los Angele	2019	LDA	Aggregate	Aggregate	DSL	31077.05	1147737	191893.6	288.5375	0	0
Los Angele	2019	LDA	Aggregate	Aggregate	ELEC	56704.71	2618544	369594.6	0	0	0
Los Angele	2019	LDT1	Aggregate	Aggregate	GAS	315750.3	10640410	1917507	369.655	0	74.76843
Los Angele	2019	LDT1	Aggregate	Aggregate	DSL	455.9665	12702.09	2385.39	401.218	0	0
Los Angele	2019	LDT1	Aggregate	Aggregate	ELEC	314.0463	9634.405	1896.425	0	0	0
Los Angele	2019	LDT2	Aggregate	Aggregate	GAS	1283290	46737089	8116771	420.1979	0	85.6272
Los Angele	2019	LDT2	Aggregate	Aggregate	DSL	2077.24	82276.28	13407.2	375.7598	0	0
Los Angele	2019	LHDT1	Aggregate	Aggregate	GAS	72850.45	2197787	1085363	744.7708	115.696	56.97345
Los Angele	2019	LHDT1	Aggregate	Aggregate	DSL	45130.17	1766614	567680.7	494.7937	137.5353	0
Los Angele	2019	LHDT2	Aggregate	Aggregate	GAS	15243.62	542913.7	227107.2	810.8772	133.6657	67.08173
Los Angele	2019	LHDT2	Aggregate	Aggregate	DSL	20416.2	860178	256810.1	541.1147	219.1071	0
Los Angele	2019	MCY	Aggregate	Aggregate	GAS	163245.1	1123841	326457.5	187.4047	0	45.68121
Los Angele	2019	MDV	Aggregate	Aggregate	GAS	835359.7	28404093	5207320	558.1636	0	113.531
Los Angele	2019	MDV	Aggregate	Aggregate	DSL	12370.32	487892.4	79537.12	485.0818	0	0
Los Angele	2019	MH	Aggregate	Aggregate	GAS	19958	170633.3	1996.598	1179.06	0	81.08805
Los Angele	2019	MH	Aggregate	Aggregate	DSL	4361.786	40413.52	436.1786	999.6747	0	0
Los Angele	2019	MHDT	Aggregate	Aggregate	GAS	12064.45	629224.8	241385.5	1172.852	528.3261	114.2156
Los Angele	2019	MHDT	Aggregate	Aggregate	DSL	69120.49	3761387	0	1160.892	691.039	0
Los Angele	2019	OBUS	Aggregate	Aggregate	GAS	5346.259	249511.2	106967.9	1167.713	368.3094	75.51386
Los Angele	2019	OBUS	Aggregate	Aggregate	DSL	3687.99	307683.2	0	1371.689	2890.096	0
Los Angele	2019	SBUS	Aggregate	Aggregate	GAS	1186.163	46133.02	4744.653	662.3246	2462.746	124.8288
Los Angele	2019	SBUS	Aggregate	Aggregate	DSL	2735.378	104549	0	1301.158	3768.186	0
Los Angele	2019	UBUS	Aggregate	Aggregate	GAS	1348.459	155615.8	5393.838	1686.449	0	307.6822
Los Angele	2019	UBUS	Aggregate	Aggregate	DSL	3657.074	421471.3	14628.29	2165.261	0	0
							Weighted Average		434.5839		

APPENDIX B

Carbon Monoxide Hotspots Assessment

APPENDIX B
CO Hotspots Screening Evaluation

To verify that the project would not cause or contribute to a violation of the CO standards, a screening evaluation of the potential for CO hotspots was conducted. The California Department of Transportation (Caltrans) and the U.C. Davis Institute of Transportation Studies *Transportation Project-Level Carbon Monoxide Protocol* (CO Protocol) (Caltrans 1997), and the SCAQMD *CEQA Air Quality Handbook* (SCAQMD 1993) were followed. CO hotspots are typically evaluated when (1) the LOS of an intersection or roadway decreases to LOS E or worse; (2) signalization and/or channelization is added to an intersection; and (3) sensitive receptors such as residences, schools, and hospitals are located in the vicinity of the affected intersection or roadway segment. According to the CO Protocol, if project traffic volume worsens an intersection’s LOS to E or F from a LOS D or above, this intersection represents a potential for a CO violation and would be required to be further analyzed.

For each scenario (existing plus cumulative projects plus total project and horizon year plus total project), the screening evaluation presents LOS with project improvements (mitigation), whether the recommended improvements (mitigation measures) are feasible, and whether a quantitative CO hotspots analysis may be required. According to the CO Protocol, there is a cap on the number of intersections that need to be analyzed for any one project. For a single project with multiple intersections, only the three intersections representing the worst LOS ratings of the project, and, to the extent they are different intersections, the three intersections representing the highest traffic volumes, need be analyzed. For each intersection failing a screening test as described in this protocol, an additional intersection should be analyzed (Caltrans 1997).

Tables B-1 and B-2 show a summary of the Project’s LOS for all 18 intersections evaluated for Existing 2017, With Ambient 2019, With Project 2019, and With Cumulative 2019.

APPENDIX B (Continued)

Table B-1
Intersection Levels of Service – A.M. Peak Hour

INTERSECTION	Existing 2017	w/ Ambient 2019	w/ Project 2019	w/ Cumulative 2019
Hawthorne Boulevard & Pacific Coast Highway [1]	D	D	C[3]	C[3]
Hawthorne Boulevard & 244th Street [1]	A	A	A	A
Hawthorne Boulevard & Newton Street [1]	A	B	B	B
Hawthorne Boulevard & Via Valmonte [1]	A	A	A	A
Hawthorne Boulevard & Rolling Hills Road [1]	B	B	B	B
Rolling Hills Road & Whiffle Tree Lane [1]	A	A	A	A
Rolling Hills Road & Fallenleaf Drive [1]	A	A	A	A
Crenshaw Boulevard & Rolling Hills Road [1]	C	C	C	D
Crenshaw Boulevard & Pacific Coast Highway [1]	D	D	D	E
Anza Avenue/Vista Montana & Pacific Coast Hwy.	C	C	C[3]	C[3]
Via Valmonte & Palos Verdes Drive North [2]	D	D	D	D
Hawthorne Boulevard & Palos Verdes Drive North	C	C	C	C
Crenshaw Boulevard & Palos Verdes Drive North [1]	E	E	E	E
Rolling Hills Road & Palos Verdes Drive North [1]	F	F	F	F
Newton Street & Calle Mayor [2]	B	B	B	B
Visa Montana & Newton Street [2]	B	C	C	C
Madison Street & Newton Street [2]	A	A	A	A
Pacific Coast Highway & Calle Major [1]	E	E	E	E

Notes: [1] Signalized intersection analyzed with intersection utilization capacity method
[2] Stop controlled intersection analyzed with highway capacity manual method
[3] Intersection includes future capital improvements

Table B-2
Intersection Levels of Service – P.M. Peak Hour

INTERSECTION	Existing 2017	w/ Ambient 2019	w/ Project 2019	w/ Cumulative 2019
Hawthorne Boulevard & Pacific Coast Highway [1]	D	D	C[3]	C[3]
Hawthorne Boulevard & 244th Street [1]	A	A	A	A
Hawthorne Boulevard & Newton Street [1]	B	B	C	C
Hawthorne Boulevard & Via Valmonte [1]	B	B	B	B
Hawthorne Boulevard & Rolling Hills Road [1]	B	B	B	B
Rolling Hills Road & Whiffle Tree Lane [1]	A	A	A	A
Rolling Hills Road & Fallenleaf Drive [1]	A	A	A	A
Crenshaw Boulevard & Rolling Hills Road [1]	D	D	D	D
Crenshaw Boulevard & Pacific Coast Highway [1]	E	E	E	F
Anza Avenue/Vista Montana & Pacific Coast Hwy.	D	D	C[3]	C[3]
Via Valmonte & Palos Verdes Drive North [2]	D	D	D	D
Hawthorne Boulevard & Palos Verdes Drive North	C	C	C	C
Crenshaw Boulevard & Palos Verdes Drive North [1]	D	D	D	E
Rolling Hills Road & Palos Verdes Drive North [1]	F	F	F	F
Newton Street & Calle Mayor [2]	B	B	B	B
Visa Montana & Newton Street [2]	B	B	B	B
Madison Street & Newton Street [2]	A	A	A	A
Pacific Coast Highway & Calle Major [1]	F	F	F	F

Notes: [1] Signalized intersection analyzed with intersection utilization capacity method
[2] Stop controlled intersection analyzed with highway capacity manual method
[3] Intersection includes future capital improvements

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Hawthorne&PCH2019
RUN: STANDARD RUN (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	30.5 (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	0.0 PPM		
SIGTH=	10. DEGREES	TEMP=	6.8 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. EBLA	500	36	30	36	AG	254	3.0	0.0	33.0
B. EBTA	500	18	-30	18	AG	1147	3.0	0.0	33.0
C. EBRA	500	-12	-18	-12	AG	371	3.0	0.0	33.0
D. EBD	-30	18	-500	18	AG	1649	3.0	0.0	33.0
E. WBLA	-500	-12	30	-12	AG	208	3.0	0.0	33.0
F. WBTA	-500	-54	-18	-54	AG	1008	3.0	0.0	33.0
G. WBRA	0	-36	500	-36	AG	254	3.0	0.0	33.0
H. WBD	12	-500	12	18	AG	1770	3.0	0.0	33.0
I. NBLA	30	-500	30	-12	AG	332	3.0	0.0	33.0
J. NBTA	42	-500	42	-36	AG	967	3.0	0.0	33.0
K. NBRA	30	-12	30	500	AG	79	3.0	0.0	33.0
L. NBD	0	500	0	-36	AG	1475	3.0	0.0	33.0
M. SBLA	-18	500	-18	-12	AG	423	3.0	0.0	33.0
N. SBTA	-30	500	-30	18	AG	1323	3.0	0.0	33.0
O. SBRA	-18	-12	-18	-500	AG	430	3.0	0.0	33.0
P. SBD	-500	-36	0	-36	AG	1902	3.0	0.0	33.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. SR1	-40	25	5.9
2. SR2	40	45	5.9
3. SR3	-30	-60	5.9
4. SR4	50	-45	5.9

JOB: Hawthorne&PCH2019
RUN: STANDARD RUN (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	A	B	C	D	E	F	G	H
			CONC/LINK (PPM)							
1. SR1	96.	0.9	0.0	0.4	0.1	0.1	0.0	0.0	0.0	0.1
2. SR2	254.	0.7	0.0	0.1	0.0	0.2	0.0	0.1	0.0	0.0
3. SR3	6.	0.9	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
4. SR4	274.	0.9	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1

RECEPTOR	I	J	K	L	M	N	O	P
	CONC/LINK (PPM)							
1. SR1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0
2. SR2	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1
3. SR3	0.0	0.0	0.0	0.2	0.1	0.2	0.1	0.2
4. SR4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Crenshaw&RH2019
RUN: STANDARD RUN (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	75.9 (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	0.0 PPM		
SIGTH=	10. DEGREES	TEMP=	6.8 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. EBLA	500	36	30	36	AG	118	3.0	0.0	33.0
B. EBTA	500	18	-30	18	AG	1307	3.0	0.0	33.0
C. EBRA	500	-12	-18	-12	AG	85	3.0	0.0	33.0
D. EBD	-30	18	-500	18	AG	1669	3.0	0.0	33.0
E. WBLA	-500	-12	30	-12	AG	159	3.0	0.0	33.0
F. WBTA	-500	-54	-18	-54	AG	909	3.0	0.0	33.0
G. WBRA	0	-36	500	-36	AG	138	3.0	0.0	33.0
H. WBD	12	-500	12	18	AG	995	3.0	0.0	33.0
I. NBLA	30	-500	30	-12	AG	24	3.0	0.0	33.0
J. NBTA	42	-500	42	-36	AG	181	3.0	0.0	33.0
K. NBRA	30	-12	30	500	AG	206	3.0	0.0	33.0
L. NBD	0	500	0	-36	AG	437	3.0	0.0	33.0
M. SBLA	-18	500	-18	-12	AG	156	3.0	0.0	33.0
N. SBTA	-30	500	-30	18	AG	147	3.0	0.0	33.0
O. SBRA	-18	-12	-18	-500	AG	62	3.0	0.0	33.0
P. SBD	-500	-36	0	-36	AG	391	3.0	0.0	33.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. SR1	-40	25	5.9
2. SR2	40	45	5.9
3. SR3	-30	-60	5.9
4. SR4	50	-45	5.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: Crenshaw&RH2019
RUN: STANDARD RUN (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. SR1	94.	0.6	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.0
2. SR2	254.	0.5	0.0	0.1	0.0	0.2	0.0	0.1	0.0	0.0
3. SR3	281.	0.5	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.0
4. SR4	274.	0.4	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. SR1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. SR2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. SR3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
4. SR4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Crenshaw&PCH2019
RUN: STANDARD RUN (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	46.3 (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	0.0 PPM		
SIGTH=	10. DEGREES	TEMP=	6.8 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. EBLA	500	36	30	36	AG	84	3.0	0.0	33.0
B. EBTA	500	18	-30	18	AG	729	3.0	0.0	33.0
C. EBRA	500	-12	-18	-12	AG	460	3.0	0.0	33.0
D. EBD	-30	18	-500	18	AG	1218	3.0	0.0	33.0
E. WBLA	-500	-12	30	-12	AG	358	3.0	0.0	33.0
F. WBTA	-500	-54	-18	-54	AG	1029	3.0	0.0	33.0
G. WBRA	0	-36	500	-36	AG	153	3.0	0.0	33.0
H. WBD	12	-500	12	18	AG	1715	3.0	0.0	33.0
I. NBLA	30	-500	30	-12	AG	654	3.0	0.0	33.0
J. NBTA	42	-500	42	-36	AG	1680	3.0	0.0	33.0
K. NBRA	30	-12	30	500	AG	308	3.0	0.0	33.0
L. NBD	0	500	0	-36	AG	1917	3.0	0.0	33.0
M. SBLA	-18	500	-18	-12	AG	181	3.0	0.0	33.0
N. SBTA	-30	500	-30	18	AG	1278	3.0	0.0	33.0
O. SBRA	-18	-12	-18	-500	AG	32	3.0	0.0	33.0
P. SBD	-500	-36	0	-36	AG	2096	3.0	0.0	33.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. SR1	-40	25	5.9
2. SR2	40	45	5.9
3. SR3	-30	-60	5.9
4. SR4	50	-45	5.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: Crenshaw&PCH2019
RUN: STANDARD RUN (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. SR1	140.	0.8	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2
2. SR2	185.	0.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2
3. SR3	9.	0.9	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
4. SR4	274.	1.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. SR1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0
2. SR2	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0
3. SR3	0.0	0.0	0.0	0.3	0.0	0.1	0.0	0.2
4. SR4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.4

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Hawthorne&PV2019
RUN: STANDARD RUN (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	142.0 (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	0.0 PPM		
SIGTH=	10. DEGREES	TEMP=	6.8 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. EBLA	500	36	30	36	AG	232	3.0	0.0	33.0
B. EBTA	500	18	-30	18	AG	378	3.0	0.0	33.0
C. EBRA	500	-12	-18	-12	AG	136	3.0	0.0	33.0
D. EBD	-30	18	-500	18	AG	738	3.0	0.0	33.0
E. WBLA	-500	-12	30	-12	AG	212	3.0	0.0	33.0
F. WBTA	-500	-54	-18	-54	AG	450	3.0	0.0	33.0
G. WBRA	0	-36	500	-36	AG	29	3.0	0.0	33.0
H. WBD	12	-500	12	18	AG	828	3.0	0.0	33.0
I. NBLA	30	-500	30	-12	AG	141	3.0	0.0	33.0
J. NBTA	42	-500	42	-36	AG	1071	3.0	0.0	33.0
K. NBRA	30	-12	30	500	AG	330	3.0	0.0	33.0
L. NBD	0	500	0	-36	AG	1332	3.0	0.0	33.0
M. SBLA	-18	500	-18	-12	AG	30	3.0	0.0	33.0
N. SBTA	-30	500	-30	18	AG	721	3.0	0.0	33.0
O. SBRA	-18	-12	-18	-500	AG	237	3.0	0.0	33.0
P. SBD	-500	-36	0	-36	AG	1069	3.0	0.0	33.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. SR1	-40	25	5.9
2. SR2	40	45	5.9
3. SR3	-30	-60	5.9
4. SR4	50	-45	5.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Hawthorne&PV2019
RUN: STANDARD RUN (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. SR1	12.	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. SR2	255.	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
3. SR3	9.	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. SR4	276.	0.6	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. SR1	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.0
2. SR2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
3. SR3	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.1
4. SR4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Crenshaw&PalosVerdes2019
RUN: STANDARD RUN (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

```
    U=   1.0 M/S              Z0= 100. CM            ALT= 130.5 (M)
  BRG= WORST CASE             VD=  0.0 CM/S
 CLAS=     7 (G)              VS=  0.0 CM/S
 MIXH= 1000. M               AMB=  0.0 PPM
SIGTH=   10. DEGREES        TEMP=  6.8 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (FT) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. EBLA	500	36	30	36	AG	474	3.0	0.0	33.0
B. EBTA	500	18	-30	18	AG	465	3.0	0.0	33.0
C. EBRA	500	-12	-18	-12	AG	102	3.0	0.0	33.0
D. EBD	-30	18	-500	18	AG	868	3.0	0.0	33.0
E. WBLA	-500	-12	30	-12	AG	401	3.0	0.0	33.0
F. WBTA	-500	-54	-18	-54	AG	433	3.0	0.0	33.0
G. WBRA	0	-36	500	-36	AG	62	3.0	0.0	33.0
H. WBD	12	-500	12	18	AG	958	3.0	0.0	33.0
I. NBLA	30	-500	30	-12	AG	55	3.0	0.0	33.0
J. NBTA	42	-500	42	-36	AG	715	3.0	0.0	33.0
K. NBRA	30	-12	30	500	AG	303	3.0	0.0	33.0
L. NBD	0	500	0	-36	AG	1251	3.0	0.0	33.0
M. SBLA	-18	500	-18	-12	AG	100	3.0	0.0	33.0
N. SBTA	-30	500	-30	18	AG	854	3.0	0.0	33.0
O. SBRA	-18	-12	-18	-500	AG	470	3.0	0.0	33.0
P. SBD	-500	-36	0	-36	AG	1357	3.0	0.0	33.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (FT) X	Y	Z
1. SR1	-40	25	5.9
2. SR2	40	45	5.9
3. SR3	-30	-60	5.9
4. SR4	50	-45	5.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Crenshaw&PalosVerdes2019
RUN: STANDARD RUN (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. SR1	10.	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. SR2	255.	0.5	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0
3. SR3	8.	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. SR4	276.	0.7	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. SR1	0.0	0.0	0.0	0.2	0.0	0.3	0.0	0.0
2. SR2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
3. SR3	0.0	0.0	0.0	0.2	0.0	0.1	0.1	0.1
4. SR4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: RollingHills&PalosVerdes2019
RUN: STANDARD RUN (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	1.0 M/S	Z0=	100. CM	ALT=	146.3 (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	7 (G)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	0.0 PPM		
SIGTH=	10. DEGREES	TEMP=	6.8 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
	LINK COORDINATES (FT)								
A. EBLA	500	36	30	36	AG	63	3.0	0.0	33.0
B. EBTA	500	18	-30	18	AG	863	3.0	0.0	33.0
C. EBRA	500	-12	-18	-12	AG	213	3.0	0.0	33.0
D. EBD	-30	18	-500	18	AG	926	3.0	0.0	33.0
E. WBLA	-500	-12	30	-12	AG	31	3.0	0.0	33.0
F. WBTA	-500	-54	-18	-54	AG	905	3.0	0.0	33.0
G. WBRA	0	-36	500	-36	AG	13	3.0	0.0	33.0
H. WBD	12	-500	12	18	AG	1614	3.0	0.0	33.0
I. NBLA	30	-500	30	-12	AG	657	3.0	0.0	33.0
J. NBTA	42	-500	42	-36	AG	77	3.0	0.0	33.0
K. NBRA	30	-12	30	500	AG	33	3.0	0.0	33.0
L. NBD	0	500	0	-36	AG	153	3.0	0.0	33.0
M. SBLA	-18	500	-18	-12	AG	30	3.0	0.0	33.0
N. SBTA	-30	500	-30	18	AG	66	3.0	0.0	33.0
O. SBRA	-18	-12	-18	-500	AG	52	3.0	0.0	33.0
P. SBD	-500	-36	0	-36	AG	310	3.0	0.0	33.0

III. RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
	COORDINATES (FT)		
1. SR1	-40	25	5.9
2. SR2	40	45	5.9
3. SR3	-30	-60	5.9
4. SR4	50	-45	5.9

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION

JOB: RollingHills&PalosVerdes2019
RUN: STANDARD RUN (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. SR1	96.	0.4	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
2. SR2	188.	0.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3
3. SR3	277.	0.4	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
4. SR4	271.	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. SR1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. SR2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. SR3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
4. SR4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

              JOB: PCH&CalleMajor2019
              RUN: STANDARD RUN     (WORST CASE ANGLE)
        POLLUTANT: CO
```

I. SITE VARIABLES

```
       U=   1.0 M/S            Z0= 100. CM           ALT= 34.4 (M)
     BRG= WORST CASE           VD=  0.0 CM/S
    CLAS=     7 (G)            VS=  0.0 CM/S
    MIXH= 1000. M             AMB=  0.0 PPM
   SIGTH=   10. DEGREES      TEMP=  6.8 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (FT)	W (FT)
A. EBLA	500	36	30	36	AG	194	3.0	0.0	33.0
B. EBTA	500	18	-30	18	AG	1051	3.0	0.0	33.0
C. EBRA	500	-12	-18	-12	AG	50	3.0	0.0	33.0
D. EBD	-30	18	-500	18	AG	1307	3.0	0.0	33.0
E. WBLA	-500	-12	30	-12	AG	175	3.0	0.0	33.0
F. WBTA	-500	-54	-18	-54	AG	959	3.0	0.0	33.0
G. WBRA	0	-36	500	-36	AG	86	3.0	0.0	33.0
H. WBD	12	-500	12	18	AG	1248	3.0	0.0	33.0
I. NBLA	30	-500	30	-12	AG	57	3.0	0.0	33.0
J. NBTA	42	-500	42	-36	AG	190	3.0	0.0	33.0
K. NBRA	30	-12	30	500	AG	136	3.0	0.0	33.0
L. NBD	0	500	0	-36	AG	470	3.0	0.0	33.0
M. SBLA	-18	500	-18	-12	AG	120	3.0	0.0	33.0
N. SBTA	-30	500	-30	18	AG	281	3.0	0.0	33.0
O. SBRA	-18	-12	-18	-500	AG	232	3.0	0.0	33.0
P. SBD	-500	-36	0	-36	AG	506	3.0	0.0	33.0

LINK COORDINATES (FT): X1, Y1, X2, Y2

III. RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
1. SR1	-40	25	5.9
2. SR2	40	45	5.9
3. SR3	-30	-60	5.9
4. SR4	50	-45	5.9

COORDINATES (FT): X, Y, Z

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: PCH&CalleMajor2019
RUN: STANDARD RUN (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. SR1	93.	0.6	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
2. SR2	193.	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2
3. SR3	281.	0.5	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.0
4. SR4	273.	0.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. SR1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. SR2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. SR3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
4. SR4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1

APPENDIX C

Construction Health Risk Assessment

Construction Health Risk Assessment Supporting Technical Documentation
for the Solana Torrance Project
City of Torrance, California

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MARCH 2018

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Construction Health Risk Assessment Supporting Documentation for the Solana Torrance Project

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
$\mu g/m^3$	micrograms per cubic meter
ADMRT	Air Dispersion Modeling and Risk Tool
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
ASF	age sensitivity factor
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
DBR	daily breathing rate
DPM	diesel particulate matter
EPA	U.S. Environmental Protection Agency
FAH	fraction of time at home
HARP 2	Hotspots Analysis and Reporting Program
OEHHA	Office of Environmental Health Hazard Assessment
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to 10 microns
REL	reference exposure level
SCAQMD	South Coast Air Quality Management District
TAC	toxic air contaminant
UTM	Universal Transverse Mercator

Construction Health Risk Assessment Supporting Documentation for the Solana Torrance Project

EXECUTIVE SUMMARY

The project is a 248-unit multifamily residential development, which includes four- and five-story residential structures constructed over at-grade parking garages. The project's residential unit mix would include 135 one-bedroom units and 113 two-bedroom units (Withee Malcom 2017). A total of 7,475 square feet is allocated for a leasing office and community room. A freestanding, five level on-grade parking structure with a rooftop outdoor recreation area is also proposed at the rear of the planned community. A total of 484 parking spaces would be provided by a combination of surface parking and in the parking structures. The project's estimated development area is 5.71 acres, which is proposed to occur within a disturbed and terraced area along the northeastern portion of the project development footprint, east of a moderate to steep hillside. The project would preserve 18.97 acres of the 24.68-acre property as natural open space. The project site is located within the South Coast Air Basin (SCAB) and is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD).

The dispersion modeling conducted for this assessment was performed using the U.S. Environmental Protection Agency (EPA)-approved dispersion model, American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) in conjunction with the Hotspots Analysis and Reporting Program Version 2 (HARP 2). HARP 2 has been developed by the California Air Resources Board (CARB) as a tool to conduct risk assessments and incorporates all the requirements provided by the Office of Environmental Health Hazard Assessment (OEHHA) as outlined in the *Air Toxics Hot Spot Program Risk Assessment Guidelines – Guidance Manual for Preparation of Health Risk Assessments* (OEHHA 2015). This health risk assessment (HRA) follows the 2015 OEHHA Guidelines and the SCAQMD Modeling Guidance for AERMOD (SCAQMD 2018).

Impacts related to cancer risk and chronic hazard from diesel particulate matter (DPM), which is a toxic air contaminant (TAC), would be below the SCAQMD's thresholds during construction activities; therefore, impacts would be **less than significant**.

Construction Health Risk Assessment Supporting Documentation for the Solana Torrance Project

1 INTRODUCTION

1.1 Report Purpose and Scope

In support of the air quality and greenhouse gas (GHG) emissions analysis technical report preparation, Dudek prepared a construction health risk assessment (HRA) to estimate health risk impacts from construction of the proposed Solana Torrance Project (project). The analysis presented uses air dispersion modeling methodology to evaluate potential public health risks associated with construction of the project. Results of the modeling analysis are compared with the most recent significance thresholds established by the South Coast Air Quality Management District's (SCAQMD) for purposes of California Environmental Quality Act (CEQA) analysis.

1.2 Project Description

The project site is located at the southwest corner of the intersection of Hawthorne Boulevard and Via Valmonte in the City of Torrance (City) in Los Angeles County, California. The project site encompasses approximately 24.68 acres, which is currently vacant.

The project is a 248-unit multifamily residential development, which includes four- and five-story residential structures constructed over at-grade parking garages. The project's residential unit mix would include 135 one-bedroom units and 113 two-bedroom units (Withee Malcom 2017). A total of 7,475 square feet is allocated for a leasing office and community room. A freestanding, five level on-grade parking structure with a rooftop outdoor recreation area is also proposed at the rear of the planned community. A total of 478 parking spaces would be provided by a combination of surface parking and in the parking structures. The project's estimated development area is 5.71 acres, which is proposed to occur within a disturbed and terraced area along the northeastern portion of the project development footprint, east of a moderate to steep hillside. The project would preserve 18.97 acres of the 24.68-acre property as natural open space.

1.3 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) noncancer health effects. A toxic substance released into the air is considered a toxic air contaminant (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 on acute or chronic exposure to a given TAC.

In 1998, CARB designated diesel engine exhaust particulate matter (DPM) as a TAC. 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 level has been established for DPM; therefore, acute impacts of DPM are not addressed in this assessment.

1.3.1 Cancer Risk

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 one million. The cancer risk from exposure to a TAC is estimated by calculating the inhalation (and if applicable, ingestion or dermal) dose in units of milligrams/kilogram body weight per day. The dose is based on an ambient concentration in units of micrograms per cubic meter ($\mu g/m^3$), age sensitivity factors (ASFs), daily breathing rates (DBRs), exposure period, and fraction of time spent at home (FAH). The cancer risk is calculated by multiplying the dose by the cancer potency factor, expressed as (milligrams/kilogram 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 OEHHA regulatory approach.

The cancer risk calculations were performed by multiplying the predicted dispersion modeled output data by the TAC emissions and the appropriate risk values. The exposure and risk equations that were used to calculate the cancer risk at receptors are integrated in the Hotspots Analysis and Reporting Program, Version 2 (HARP 2) model, in accordance with the *Air Toxics Hot Spot Program Risk Assessment Guidelines – Guidance Manual for Preparation of Health Risk Assessments* (OEHHA 2015).

The following equations were used to calculate the cancer risk using the model output data and estimated TAC emissions associated with diesel exhaust.

Cancer Risk = DOSE * CPF * ASF * ED/AT * FAH

DOSE = (C_{air} * DBR * A * EF * 10^{-6})

C_{air}= ER * X/Q

Where:

- DOSE: Daily inhalation dose (mg/kg-day)

- CPF: Cancer potency factor (mg/kg-day) -1
- ASF: Age sensitivity factor for a specified age group (unitless)
- ED: Exposure duration (in years) for a specified age group
- AT: Averaging time for lifetime cancer risk (years)
- FAH: Fraction of time spent at home (unitless)
- C_{air}: Average air concentration of TAC from the air dispersion model ($\mu g/m^3$)
- DBR: Daily breathing rate (L/kg body weight-day)
- EF: Exposure frequency (unitless), days/365 days
- A: Inhalation absorption factor (unitless)
- 10^{-6}: Micrograms to milligrams conversion, liters to cubic meters conversion
- ER: Emission rates (g/s)
- X/Q: Model output data ($\mu g/m^3$)/(g/s)

1.3.2 Noncancer Health Impacts

The noncancer health impact of an inhaled TAC is measured by the hazard quotient, which is the ratio of the ambient concentration of a TAC in units of $\mu g/m^3$ divided by the reference exposure level (REL), also in units of $\mu g/m^3$. The REL is the concentration at or below which no adverse health effects are anticipated. The REL is typically based on health effects to 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. For DPM, the target organ system is the respiratory system.

In addition to the potential cancer risk, DPM has chronic (i.e., long-term) noncancer health impacts. The chronic noncancer hazard index for DPM was calculated by dividing the maximum modeled annual average concentration of TACs by its REL as implemented by HARP 2.

The chronic hazard quotients were calculated for DPM using the following equation (OEHHA 2015).

CHQ = (C_{air} /REL)

Where:

- CHQ: Chronic hazard quotient
- Cair: Annual average concentration (μg/m3)
- REL: Chronic reference exposure level (μg/m^3)

2 GUIDANCE AND THRESHOLDS

2.1 South Coast Air Quality Management District Guidance

The SCAQMD has established the following significance thresholds for TACs (SCAQMD 2015):

- Maximum Incremental Cancer Risk ≥ 10 in 1 million
- Chronic & Acute Hazard Index ≥ 1.0 (project increment)

2.2 OEHHA Guidance

OEHHA's most recent guidance is the *Air Toxics Hot Spots Program Risk Assessment Guidelines – Guidance Manual for Preparation of Health Risk Assessments* (OEHHA 2015), which was adopted in 2015 replacing the previous 2003 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, required revisions of the methods for both noncancer and cancer risk assessment and of the exposure assumptions in the 2003 OEHHA HRA guidance manual. In response to Senate Bill 25, OEHHA released three technical support documents (TSDs) addressing RELs (OEHHA 2008), cancer potency (OEHHA 2009), and exposure assessment and stochastic analysis (OEHHA 2012) and adopted the revised HRA guidance manual (OEHHA 2015). The TSD for RELs and continuing work to re-evaluate 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. Moreover, 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).

The cancer risk methodology described in exposure assessment and stochastic analysis TSD and the OEHHA guidance manual accounts for the higher sensitivity of infants and children by applying age-specific DBRs and ASFs. According to the TSD, "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 [kilogram] body weight that occurs early in life due to behavioral and physiological differences between infants and children, and adults" (OEHHA 2012). In part, early-life periods are accounted for through the use of age-sensitivity factors. Compared to the previous guidance, which relied on a single breathing rate for all ages, the revised guidance also includes age-specific DBRs that reflect the differences between those for infants, children, and adults.

3 ESTIMATED EMISSIONS

Construction of the project would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment, and soil disturbance) and off-site sources (i.e., on-road haul trucks, vendor trucks, and worker vehicle trips). Emissions from the construction phase of the project were estimated using the California Emissions Estimator Model (CalEEMod), version 2016.3.2. For the construction health risk assessment, the CalEEMod scenario for the project was adjusted to reduce diesel truck one-way trip distances to 1,000 feet to estimate emissions from truck pass-by at proximate receptors. Details of the emission calculations are provided in Appendix A.

4 MODELING METHODOLOGY

4.1 Dispersion Model

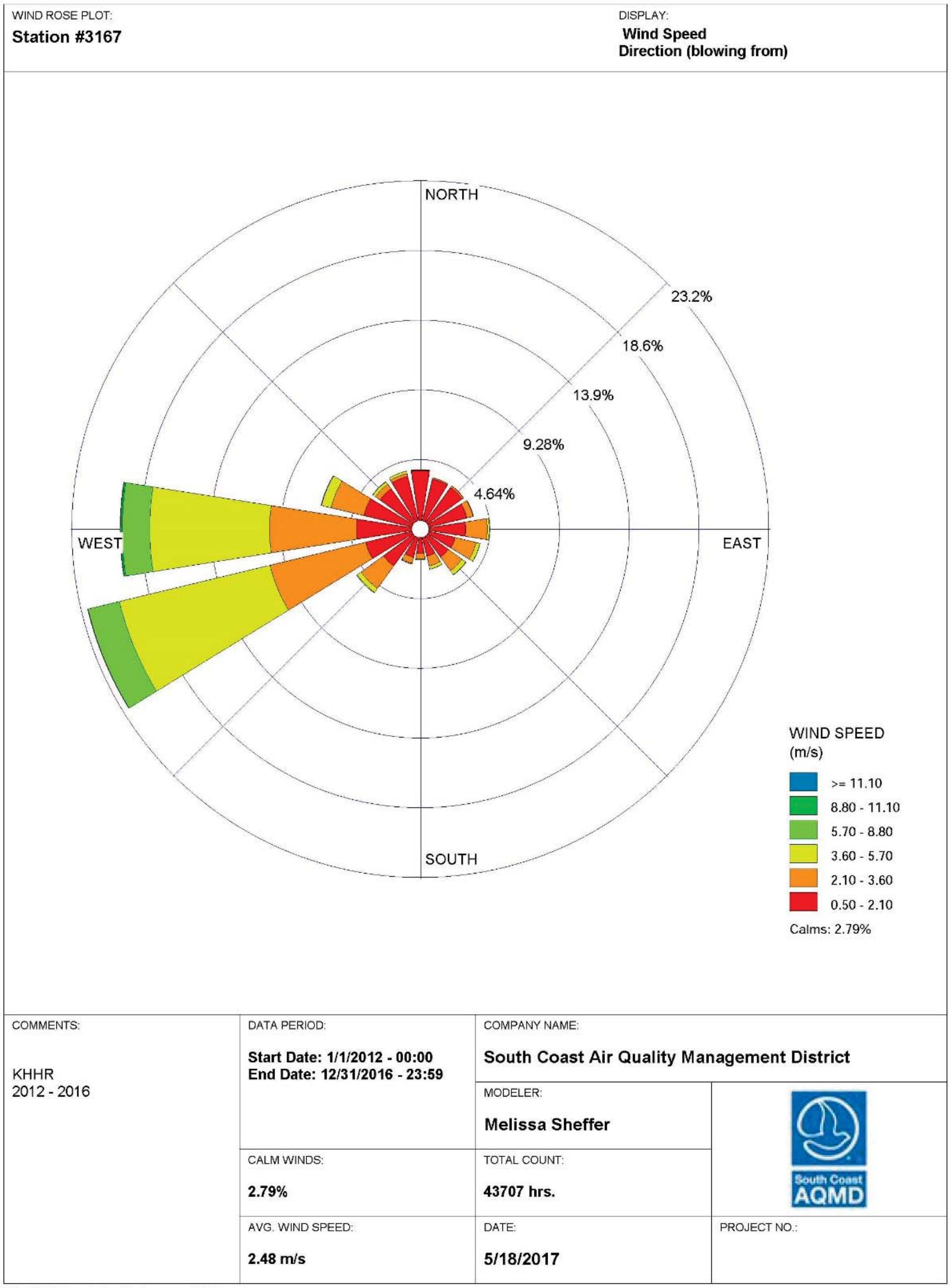
Air dispersion models calculate the atmospheric transport and fate of pollutants from the emission source. The models calculate the concentration of selected pollutants at specific downwind ground-level points, such as residential or off-site workplace receptors. The transformation (fate) of an airborne 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.

Dispersion modeling was performed for the HRA using the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD). AERMOD is a steady-state Gaussian plume model that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, building downwash, and both simple and complex terrain. Principal parameters of AERMOD for the Project construction include the following:

Dispersion Model. The air dispersion model used was AERMOD, Version 16216r, with the Lakes Environmental Software implementation/user interface, AERMOD View, Version 9.5.0. AERMOD was run with all sources emitting unit emissions (1 g/s) to obtain the “X/Q” values. X/Q is a dispersion factor that is the average effluent concentration normalized by source strength, and is used as a way to simplify the representation of emissions from many sources. The X/Q values of ground-level concentrations (GLCs) were determined for construction emissions using AERMOD and the maximum concentrations determined for the 1-hour and Period averaging periods.

Meteorological Data. The latest 5-year meteorological data (2012–2016) for the Hawthorne Airport monitoring station (KHHR) from SCAQMD were used. A windrose is provided for this station in Figure 1.

Figure 1
Windrose for Hawthorne Airport Meteorological Station



WRPLOT View - Lakes Environmental Software

Source: SCAQMD 2017.

Model Options. The modeling included the use of standard regulatory default options, including the use of urban dispersion parameters and elevated terrain per SCAQMD guidance.

Terrain Characteristics. Digital elevation model files were imported into AERMOD so that complex terrain features were evaluated as appropriate.

Modeling Grid. A 2-kilometer by 2-kilometer Cartesian receptor grid with 100-meter spacing was used to evaluate locations of maximum health risk impact.

Discrete Receptors. Discrete receptors were analyzed to the north, east, south, and west of project activity where actual receptors are located, and the nearest school.

Source Equipment Operating Scenarios. Air dispersion modeling of construction activities was conducted using emissions generated using CalEEMod. The emissions within the construction area were modeled as a single area source.

Source Release Characteristics. For modeling construction emissions impacts using AERMOD and HARP 2, it was assumed that the project would be constructed over a 3-year period of activity. While construction of the project would last approximately 2.5 years, average annual construction emissions estimated over 2.5 years were conservatively assumed to occur continuously over 3 years. An initial vertical dimension of 1.0 meters and release height of 5 meters was used for diesel equipment and truck exhaust.

4.2 Health Risk Assessment Methodology

This HRA follows the 2015 OEHHA Guidelines and the SCAQMD Modeling Guidance for AERMOD (SCAQMD 2018). 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). These emissions could result in elevated concentrations of DPM at nearby receptors, which could lead to an increase in the risk of cancer or other health impacts. Consequently, an HRA was performed to determine the extent of increased cancer risks and hazard indices at the maximally exposed receptor. The dispersion of DPM was modeled using the AERMOD dispersion model, along with meteorological data provided by the SCAQMD for the project site, and the resultant health impacts were calculated using the CARB HARP 2.

The nearest existing off-site residential receptors consist of single-family residences approximately 15 meters (50 feet) to the north of the project site. Additional residential receptors are located to the southwest and west of the project site, and to the east of the project site across Hawthorne Boulevard. The closest off-site worker receptors are at the Hillside Village Shopping Center on the eastside of Hawthorne Boulevard approximately 34 meters (110 feet) east of the project site. The closest off-site school receptor is Walteria Elementary School located approximately 360 meters (1,182 feet) northeast of the project site.

For residential receptors, given the less-than-lifetime exposure period, and the higher breathing rates and sensitivity of children to TACs, the cancer risk calculation assumes that the exposure would affect children early in their lives. For the derived cancer risk calculation under the worst-case scenario, the 3-year exposure duration was assumed to start during the 3rd trimester of pregnancy. Additionally, FAH default factors were applied only to age groups greater than or equal to 16-years old. For children less than 16 years old, a FAH of 100 percent was assumed, which estimates risk with the assumption that young children are exposed to comparable air pollutant concentrations if they attend school close to home. For the elementary school receptors, exposure was assumed to begin at age 4 with a moderate intensity 8-hour breathing rate. For the worker receptors, exposure was assumed to begin at age 16, also with a moderate intensity 8-hour breathing rate.

5 HEALTH RISK ASSESSMENT RESULTS

An HRA was performed to estimate the Maximum Individual Cancer Risk and the Chronic Hazard Index for proximate receptors. Off-site residential receptors, off-site worker receptors, and receptors at the nearest school site were evaluated. The maximum exposed individual resident was the resident living on Blair Way (where Park Street bends into Blair Way) east of the project site at Universal Transverse Mercator (UTM) coordinates (374978.7, 3740592.9). The maximum exposed worker was at the Hillside Village Shopping Center east of the project site at UTM coordinates (512040, 3618362). The Walteria Elementary School, which is the closest school to the project area, was located at UTM coordinates (375257.9, 3740752.93).

Cancer Risk

Table 1 tabulates cancer risk for off-site residences, workers, and Walteria Elementary School.

Table 1
Construction Cancer Risk Assessment Results

Impact Parameter	Units	Proposed Project Impact	CEQA Threshold	Level of Significance
Maximum Individual Cancer Risk—Off-Site Residential	Per Million	4.53	10	Less than Significant
Maximum Individual Cancer Risk—Worker	Per Million	0.15	10	Less than Significant
Maximum Individual Cancer Risk— Walteria Elementary School	Per Million	0.12	10	Less than Significant

As shown in Table 1, construction emissions would result in maximum individual cancer risks for off-site residences, worker locations, and the Walteria Elementary School that are below the significance threshold of 10 in 1 million. Therefore, project-generated construction impacts associated with cancer risk would be **less than significant.**

Chronic Hazard

Table 2 tabulates chronic hazard index for off-site residences, workers, and the Walteria Elementary School.

Table 2
Construction Chronic Hazard Index Assessment Results

Impact Parameter	Units	Proposed Project Impact	CEQA Threshold	Level of Significance
Chronic Hazard Index—Off-Site Residential	Index Value	0.002	1.0	Less than Significant
Chronic Hazard Index—Worker	Index Value	0.004	1.0	Less than Significant
Chronic Hazard Index — Walteria Elementary School	Index Value	0.0003	1.0	Less than Significant

As shown in Table 2, project-generated construction emissions would result in chronic hazard indices for off-site residences, worker locations, and the Walteria Elementary School that are below the significance threshold of 1.0. Therefore, the project-generated construction impacts associated with chronic risk would be **less than significant**.

6 CONCLUSIONS

The project’s increased cancer risk and chronic risk at off-site residences, off-site workers, and the Walteria Elementary School receptors would not exceed the SCAQMD’s thresholds. Therefore, impacts would be **less than significant**.

7 REFERENCES

OEHHA (Office of Environmental Health Hazard Assessment). 2008. *Air Toxics Hot Spots Risk Assessment Guidelines – Technical Support Document for the Derivation of Noncancer Reference Exposure Levels*. June 2008. Accessed August 2017. http://www.oehha.ca.gov/ air/hot_spots/2008/NoncancerTSD_final.pdf.

OEHHA. 2009. *Technical Support Document for Cancer Potency Factors: Methodologies for Derivation, Listing of Available Values, and Adjustments to Allow for Early Life Stage Exposures*. May 2009. Accessed August 2017. https://oehha.ca.gov/ media/downloads/crnr/tsdcancerpotency.pdf.

OEHHA. 2012. *Air Toxics Hot Spots Program Risk Assessment Guidelines – Technical Support Document Exposure Assessment and Stochastic Analysis*. February 2012. Accessed August 2017. https://oehha.ca.gov/media/downloads/crnr/combinedsmall.pdf.

OEHHA. 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines – Guidance Manual for Preparation of Health Risk Assessments*. February 2015. Accessed August 2017. http://www.oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf.

South Coast Air Quality Management District. 2018. Modeling Guidance for AERMOD. http://www.aqmd.gov/home/air-quality/air-quality-data-studies/meteorological-data/modeling-guidance

APPENDIX A

CalEEMod Output Files

Solana Torrance Residential Development - Construction Health Risk Assessment

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	439.00	Space	0.00	174,475.00	0
Parking Lot	45.00	Space	1.48	64,383.00	0
City Park	2.21	Acre	2.21	96,385.00	0
Health Club	7.47	1000sqft	0.00	7,475.00	0
User Defined Recreational	18.97	User Defined Unit	18.97	0.00	0
Apartments Mid Rise	248.00	Dwelling Unit	2.02	276,769.00	645

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	636.97	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See Section 1.0 Project Characteristics. Operational year 2019 consistent with traffic report. CO2 Intensity factor adjusted for 2016 SCE Power Content Label assuming 28% renewables (636.97 lb/MWh).

Land Use - See 1.1 Land Usage. Apartments Mid Rise includes res floor area & building circulation. Health Club = the leasing office & community room. City Park = landscape area. User Defined Recreational = preserved open space.

Construction Phase - See 3.0 Construction Detail. Based on applicant-provided schedule assumptions.

Off-road Equipment - Architectural Coating. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions. Small portable air compressors (0.75 HP) used for architectural coating will be battery-operated.

Off-road Equipment - Default CalEEMod values. See 3.0 Construction Detail.

Off-road Equipment - Building Construction - Parking Garage. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions.

Off-road Equipment - Building Construction - Residential. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions.

Off-road Equipment - Grading. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions.

Off-road Equipment - Paving. See 3.0 Construction Detail. Based on applicant-provided construction equipment assumptions.

Trips and VMT - See 3.0 Construction Detail. Assumes 1,000 feet (0.19 miles) trip length for vendor and haul truck trips.

On-road Fugitive Dust - Default CalEEMod values.

Demolition - No demolition would occur.

Grading - See 3.0 Construction Detail. 119,270 CY of export (120,915 CY cut - 1,646 CY fill = 119,270 CY). Assumed 1 acre/day x 87 days = 87 acres disturbed.

Architectural Coating - Default CalEEMod values.

Vehicle Trips - Default CalEEMod Apartments Mid Rise trip rates and project-specific weekday trip rates (KHR Associates 2017) are consistent. Default CalEEMod Saturday and Sunday trip rates used. Health Club and City Park will not generate trips (onsite amenities).

Vehicle Emission Factors - Default CalEEMod emission factors for 2019.

Vehicle Emission Factors - Default CalEEMod emission factors for 2019.

Vehicle Emission Factors - Default CalEEMod emission factors for 2019.

Road Dust - Default CalEEMod values.

Woodstoves - No woodstoves. No fireplaces.

Consumer Products - Default CalEEMod values.

Area Coating - Default CalEEMod values.

Landscape Equipment - Default CalEEMod values.

Energy Use - Default CalEEMod values.

Water And Wastewater - Default CalEEMod values for indoor and outdoor water use. Assumed 100% Aerobic.

Solid Waste - Default CalEEMod values.

Construction Off-road Equipment Mitigation - Water Exposed Area, Frequency: 3 times per day. Unpaved Road Mitigation, Vehicle Speed: 15 mph. Soil Stabilizer for Unpaved Roads (surrogate for watering 3x day): 61% reduction PM10 & PM2.5.

Mobile Land Use Mitigation - Project Setting: Suburban Center. Increase Density: 10 DU/acre. Improve Destination Accessibility: Distance to Job Center: 5 miles. Improve Pedestrian Network: Project Site and Connecting Off-Site. Traffic Calming: 25% streets/25% intersections.

Area Mitigation - No mitigation applied.

Energy Mitigation - Install High Efficiency Lighting: 40% Lighting Energy Reduction. Energy Efficient Appliances: All.

Water Mitigation - Apply Water Conservation Strategy: 20% reduction in indoor, 20% reduction in outdoor.

Waste Mitigation - Percent Reduction in Waste Disposed: 50%. Waste diversion consistent with Assembly Bill 939.

Operational Off-Road Equipment - No operationl off-road equipment.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	35.00	87.00
tblConstructionPhase	NumDays	370.00	153.00
tblConstructionPhase	NumDays	20.00	44.00
tblConstructionPhase	NumDays	370.00	390.00
tblConstructionPhase	NumDays	20.00	66.00
tblFireplaces	FireplaceDayYear	25.00	0.00
tblFireplaces	FireplaceHourDay	3.00	0.00
tblFireplaces	FireplaceWoodMass	1,019.20	0.00
tblFireplaces	NumberGas	210.80	0.00
tblFireplaces	NumberNoFireplace	24.80	0.00
tblFireplaces	NumberWood	12.40	0.00
tblGrading	AcresOfGrading	0.00	87.00
tblGrading	MaterialExported	0.00	119,270.00
tblLandUse	LandUseSquareFeet	175,600.00	174,475.00
tblLandUse	LandUseSquareFeet	18,000.00	64,383.00
tblLandUse	LandUseSquareFeet	96,267.60	96,385.00
tblLandUse	LandUseSquareFeet	7,470.00	7,475.00
tblLandUse	LandUseSquareFeet	248,000.00	276,769.00
tblLandUse	LotAcreage	3.95	0.00
tblLandUse	LotAcreage	0.41	1.48

tblLandUse	LotAcreage	0.17	0.00
tblLandUse	LotAcreage	0.00	18.97
tblLandUse	LotAcreage	6.53	2.02
tblLandUse	Population	709.00	645.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblProjectCharacteristics	CO2IntensityFactor	702.44	636.97
tblTripsAndVMT	HaulingTripLength	20.00	0.19
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tblTripsAndVMT	HaulingTripLength	20.00	0.19

tblTripsAndVMT	HaulingTripLength	20.00	0.19
tblTripsAndVMT	HaulingTripLength	20.00	0.19
tblTripsAndVMT	HaulingTripNumber	14,909.00	14,910.00
tblTripsAndVMT	VendorTripLength	6.90	0.19
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tblTripsAndVMT	VendorTripLength	6.90	0.19
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tblTripsAndVMT	VendorTripLength	6.90	0.19
tblTripsAndVMT	VendorTripNumber	83.00	40.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	83.00	30.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripNumber	8.00	0.00
tblTripsAndVMT	WorkerTripNumber	323.00	0.00
tblTripsAndVMT	WorkerTripNumber	8.00	0.00
tblTripsAndVMT	WorkerTripNumber	323.00	0.00
tblTripsAndVMT	WorkerTripNumber	65.00	0.00
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	20.87	0.00
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	26.73	0.00
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	32.93	0.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00

tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
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tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
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tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	NumberCatalytic	12.40	0.00
tblWoodstoves	NumberNoncatalytic	12.40	0.00
tblWoodstoves	WoodstoveDayYear	25.00	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.1329	2.1254	1.0953	2.5000e-003	0.0549	0.0638	0.1187	6.5900e-003	0.0588	0.0654	0.0000	234.1819	234.1819	0.0593	0.0000	235.6640
2019	0.1230	1.3124	0.7230	1.3600e-003	7.8000e-004	0.0606	0.0614	2.4000e-004	0.0563	0.0565	0.0000	121.5444	121.5444	0.0332	0.0000	122.3739
2020	0.9838	0.5494	0.3148	6.2000e-004	3.7000e-004	0.0239	0.0243	1.1000e-004	0.0222	0.0223	0.0000	54.4843	54.4843	0.0148	0.0000	54.8549
Maximum	**0.9838**	**2.1254**	**1.0953**	**2.5000e-003**	**0.0549**	**0.0638**	**0.1187**	**6.5900e-003**	**0.0588**	**0.0654**	**0.0000**	**234.1819**	**234.1819**	**0.0593**	**0.0000**	**235.6640**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.1329	2.1254	1.0953	2.5000e-003	0.0227	0.0638	0.0865	2.9300e-003	0.0588	0.0617	0.0000	234.1818	234.1818	0.0593	0.0000	235.6638
2019	0.1230	1.3124	0.7230	1.3600e-003	7.8000e-004	0.0606	0.0614	2.4000e-004	0.0563	0.0565	0.0000	121.5443	121.5443	0.0332	0.0000	122.3738
2020	0.9838	0.5494	0.3148	6.2000e-004	3.7000e-004	0.0239	0.0243	1.1000e-004	0.0222	0.0223	0.0000	54.4842	54.4842	0.0148	0.0000	54.8548
Maximum	**0.9838**	**2.1254**	**1.0953**	**2.5000e-003**	**0.0227**	**0.0638**	**0.0865**	**2.9300e-003**	**0.0588**	**0.0617**	**0.0000**	**234.1818**	**234.1818**	**0.0593**	**0.0000**	**235.6638**

Solana Torrance Residential Development - Construction Health Risk Assessment - Los Angeles-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	57.54	0.00	15.79	52.74	0.00	2.54	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-2-2018	4-1-2018	0.8191	0.8191
2	4-2-2018	7-1-2018	0.7431	0.7431
3	7-2-2018	10-1-2018	0.3868	0.3868
4	10-2-2018	1-1-2019	0.3037	0.3037
5	1-2-2019	4-1-2019	0.3524	0.3524
6	4-2-2019	7-1-2019	0.3581	0.3581
7	7-2-2019	10-1-2019	0.3620	0.3620
8	10-2-2019	1-1-2020	0.3599	0.3599
9	1-2-2020	4-1-2020	0.5096	0.5096
10	4-2-2020	7-1-2020	1.0212	1.0212
		Highest	1.0212	1.0212

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.2161	0.0298	2.5768	1.4000e-004		0.0141	0.0141		0.0141	0.0141	0.0000	4.1904	4.1904	4.1400e-003	0.0000	4.2938
Energy	0.0161	0.1382	0.0620	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	764.5776	764.5776	0.0306	8.6200e-003	767.9128
Mobile	0.6413	3.2859	8.9466	0.0273	2.0909	0.0319	2.1228	0.5606	0.0300	0.5905	0.0000	2,513.6483	2,513.6483	0.1475	0.0000	2,517.3368
Waste						0.0000	0.0000		0.0000	0.0000	31.8391	0.0000	31.8391	1.8816	0.0000	78.8801
Water						0.0000	0.0000		0.0000	0.0000	5.8731	104.4710	110.3441	0.0250	0.0138	115.0678
Total	**1.8736**	**3.4540**	**11.5854**	**0.0283**	**2.0909**	**0.0571**	**2.1480**	**0.5606**	**0.0552**	**0.6158**	**37.7122**	**3,386.8873**	**3,424.5996**	**2.0889**	**0.0224**	**3,483.4912**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.2161	0.0298	2.5768	1.4000e-004		0.0141	0.0141		0.0141	0.0141	0.0000	4.1904	4.1904	4.1400e-003	0.0000	4.2938
Energy	0.0161	0.1382	0.0620	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	695.2460	695.2460	0.0275	7.9700e-003	698.3076
Mobile	0.5971	2.9676	7.8731	0.0235	1.7877	0.0276	1.8153	0.4793	0.0259	0.5052	0.0000	2,167.1239	2,167.1239	0.1294	0.0000	2,170.3578
Waste						0.0000	0.0000		0.0000	0.0000	15.9196	0.0000	15.9196	0.9408	0.0000	39.4401
Water						0.0000	0.0000		0.0000	0.0000	4.6985	83.5768	88.2753	0.0200	0.0110	92.0542
Total	**1.8294**	**3.1357**	**10.5119**	**0.0246**	**1.7877**	**0.0528**	**1.8405**	**0.4793**	**0.0512**	**0.5305**	**20.6181**	**2,950.1371**	**2,970.7552**	**1.1218**	**0.0190**	**3,004.4535**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**2.36**	**9.21**	**9.27**	**13.28**	**14.50**	**7.55**	**14.31**	**14.50**	**7.34**	**13.86**	**45.33**	**12.90**	**13.25**	**46.30**	**15.24**	**13.75**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/16/2018	5/16/2018	5	87	
2	Building Construction - Parking Garage	Building Construction	5/17/2018	12/17/2018	5	153	
3	Paving	Paving	6/1/2018	8/1/2018	5	44	
4	Building Construction - Residential	Building Construction	12/16/2018	6/12/2020	5	390	
5	Architectural Coating	Architectural Coating	3/15/2020	6/15/2020	5	66	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 87

Acres of Paving: 1.48

Residential Indoor: 560,457; Residential Outdoor: 186,819; Non-Residential Indoor: 11,213; Non-Residential Outdoor: 3,738; Striped Parking Area: 14,331 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Grading	Rubber Tired Loaders	1	8.00	203	0.36
Grading	Scrapers	0	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction - Parking Garage	Cranes	0	7.00	231	0.29
Building Construction - Parking Garage	Forklifts	0	8.00	89	0.20
Building Construction - Parking Garage	Generator Sets	0	8.00	84	0.74
Building Construction - Parking Garage	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction - Parking Garage	Welders	0	8.00	46	0.45
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38
Building Construction - Residential	Cranes	1	6.00	231	0.29
Building Construction - Residential	Forklifts	2	8.00	89	0.20
Building Construction - Residential	Generator Sets	0	8.00	84	0.74
Building Construction - Residential	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Building Construction - Residential	Welders	1	4.00	46	0.45
Architectural Coating	Air Compressors	0	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	3	0.00	0.00	14,910.00	14.70	0.19	0.19	LD_Mix	HDT_Mix	HHDT
Building Construction - Parking Garage	2	0.00	40.00	0.00	14.70	0.19	0.19	LD_Mix	HDT_Mix	HHDT
Paving	3	0.00	2.00	0.00	14.70	0.19	0.19	LD_Mix	HDT_Mix	HHDT
Building Construction - Residential	4	0.00	30.00	0.00	14.70	0.19	0.19	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	0.00	2.00	0.00	14.70	0.19	0.19	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0529	0.0000	0.0529	6.0000e-003	0.0000	6.0000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0439	0.5010	0.3605	7.2000e-004		0.0209	0.0209		0.0193	0.0193	0.0000	65.8248	65.8248	0.0205	0.0000	66.3371
Total	**0.0439**	**0.5010**	**0.3605**	**7.2000e-004**	**0.0529**	**0.0209**	**0.0738**	**6.0000e-003**	**0.0193**	**0.0253**	**0.0000**	**65.8248**	**65.8248**	**0.0205**	**0.0000**	**66.3371**

3.2 Grading - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0165	0.7688	0.1231	8.1000e-004	1.3700e-003	7.0000e-004	2.0700e-003	3.9000e-004	6.7000e-004	1.0600e-003	0.0000	78.7858	78.7858	0.0136	0.0000	79.1261
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0165**	**0.7688**	**0.1231**	**8.1000e-004**	**1.3700e-003**	**7.0000e-004**	**2.0700e-003**	**3.9000e-004**	**6.7000e-004**	**1.0600e-003**	**0.0000**	**78.7858**	**78.7858**	**0.0136**	**0.0000**	**79.1261**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0206	0.0000	0.0206	2.3400e-003	0.0000	2.3400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0439	0.5010	0.3605	7.2000e-004		0.0209	0.0209		0.0193	0.0193	0.0000	65.8247	65.8247	0.0205	0.0000	66.3370
Total	**0.0439**	**0.5010**	**0.3605**	**7.2000e-004**	**0.0206**	**0.0209**	**0.0415**	**2.3400e-003**	**0.0193**	**0.0216**	**0.0000**	**65.8247**	**65.8247**	**0.0205**	**0.0000**	**66.3370**

3.2 Grading - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0165	0.7688	0.1231	8.1000e-004	1.3700e-003	7.0000e-004	2.0700e-003	3.9000e-004	6.7000e-004	1.0600e-003	0.0000	78.7858	78.7858	0.0136	0.0000	79.1261
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0165**	**0.7688**	**0.1231**	**8.1000e-004**	**1.3700e-003**	**7.0000e-004**	**2.0700e-003**	**3.9000e-004**	**6.7000e-004**	**1.0600e-003**	**0.0000**	**78.7858**	**78.7858**	**0.0136**	**0.0000**	**79.1261**

3.3 Building Construction - Parking Garage - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0407	0.4024	0.3575	4.8000e-004		0.0285	0.0285		0.0262	0.0262	0.0000	43.4131	43.4131	0.0135	0.0000	43.7510
Total	**0.0407**	**0.4024**	**0.3575**	**4.8000e-004**		**0.0285**	**0.0285**		**0.0262**	**0.0262**	**0.0000**	**43.4131**	**43.4131**	**0.0135**	**0.0000**	**43.7510**

3.3 Building Construction - Parking Garage - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.8300e-003	0.1970	0.0586	1.8000e-004	6.1000e-004	2.4000e-004	8.5000e-004	1.8000e-004	2.3000e-004	4.1000e-004	0.0000	17.8232	17.8232	3.0700e-003	0.0000	17.9000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.8300e-003**	**0.1970**	**0.0586**	**1.8000e-004**	**6.1000e-004**	**2.4000e-004**	**8.5000e-004**	**1.8000e-004**	**2.3000e-004**	**4.1000e-004**	**0.0000**	**17.8232**	**17.8232**	**3.0700e-003**	**0.0000**	**17.9000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0407	0.4024	0.3575	4.8000e-004		0.0285	0.0285		0.0262	0.0262	0.0000	43.4130	43.4130	0.0135	0.0000	43.7509
Total	**0.0407**	**0.4024**	**0.3575**	**4.8000e-004**		**0.0285**	**0.0285**		**0.0262**	**0.0262**	**0.0000**	**43.4130**	**43.4130**	**0.0135**	**0.0000**	**43.7509**

3.3 Building Construction - Parking Garage - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.8300e-003	0.1970	0.0586	1.8000e-004	6.1000e-004	2.4000e-004	8.5000e-004	1.8000e-004	2.3000e-004	4.1000e-004	0.0000	17.8232	17.8232	3.0700e-003	0.0000	17.9000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.8300e-003**	**0.1970**	**0.0586**	**1.8000e-004**	**6.1000e-004**	**2.4000e-004**	**8.5000e-004**	**1.8000e-004**	**2.3000e-004**	**4.1000e-004**	**0.0000**	**17.8232**	**17.8232**	**3.0700e-003**	**0.0000**	**17.9000**

3.4 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0181	0.1927	0.1628	2.5000e-004		0.0105	0.0105		9.6800e-003	9.6800e-003	0.0000	22.8928	22.8928	7.1300e-003	0.0000	23.0710
Paving	1.9400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0200**	**0.1927**	**0.1628**	**2.5000e-004**		**0.0105**	**0.0105**		**9.6800e-003**	**9.6800e-003**	**0.0000**	**22.8928**	**22.8928**	**7.1300e-003**	**0.0000**	**23.0710**

3.4 Paving - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	2.8300e-003	8.4000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.2563	0.2563	4.0000e-005	0.0000	0.2574
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.0000e-005**	**2.8300e-003**	**8.4000e-004**	**0.0000**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.2563**	**0.2563**	**4.0000e-005**	**0.0000**	**0.2574**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0181	0.1927	0.1628	2.5000e-004		0.0105	0.0105		9.6800e-003	9.6800e-003	0.0000	22.8928	22.8928	7.1300e-003	0.0000	23.0709
Paving	1.9400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0200**	**0.1927**	**0.1628**	**2.5000e-004**		**0.0105**	**0.0105**		**9.6800e-003**	**9.6800e-003**	**0.0000**	**22.8928**	**22.8928**	**7.1300e-003**	**0.0000**	**23.0709**

3.4 Paving - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	2.8300e-003	8.4000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.2563	0.2563	4.0000e-005	0.0000	0.2574
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.0000e-005**	**2.8300e-003**	**8.4000e-004**	**0.0000**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.2563**	**0.2563**	**4.0000e-005**	**0.0000**	**0.2574**

3.5 Building Construction - Residential - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.5300e-003	0.0501	0.0288	5.0000e-005		2.9100e-003	2.9100e-003		2.7000e-003	2.7000e-003	0.0000	4.2249	4.2249	1.2500e-003	0.0000	4.2563
Total	**5.5300e-003**	**0.0501**	**0.0288**	**5.0000e-005**		**2.9100e-003**	**2.9100e-003**		**2.7000e-003**	**2.7000e-003**	**0.0000**	**4.2249**	**4.2249**	**1.2500e-003**	**0.0000**	**4.2563**

3.5 Building Construction - Residential - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1000e-004	0.0106	3.1600e-003	1.0000e-005	3.0000e-005	1.0000e-005	5.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.9611	0.9611	1.7000e-004	0.0000	0.9652
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.1000e-004**	**0.0106**	**3.1600e-003**	**1.0000e-005**	**3.0000e-005**	**1.0000e-005**	**5.0000e-005**	**1.0000e-005**	**1.0000e-005**	**2.0000e-005**	**0.0000**	**0.9611**	**0.9611**	**1.7000e-004**	**0.0000**	**0.9652**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.5300e-003	0.0501	0.0288	5.0000e-005		2.9100e-003	2.9100e-003		2.7000e-003	2.7000e-003	0.0000	4.2249	4.2249	1.2500e-003	0.0000	4.2563
Total	**5.5300e-003**	**0.0501**	**0.0288**	**5.0000e-005**		**2.9100e-003**	**2.9100e-003**		**2.7000e-003**	**2.7000e-003**	**0.0000**	**4.2249**	**4.2249**	**1.2500e-003**	**0.0000**	**4.2563**

3.5 Building Construction - Residential - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1000e-004	0.0106	3.1600e-003	1.0000e-005	3.0000e-005	1.0000e-005	5.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.9611	0.9611	1.7000e-004	0.0000	0.9652
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.1000e-004**	**0.0106**	**3.1600e-003**	**1.0000e-005**	**3.0000e-005**	**1.0000e-005**	**5.0000e-005**	**1.0000e-005**	**1.0000e-005**	**2.0000e-005**	**0.0000**	**0.9611**	**0.9611**	**1.7000e-004**	**0.0000**	**0.9652**

3.5 Building Construction - Residential - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1162	1.0667	0.6540	1.1300e-003		0.0603	0.0603		0.0560	0.0560	0.0000	98.8285	98.8285	0.0294	0.0000	99.5644
Total	**0.1162**	**1.0667**	**0.6540**	**1.1300e-003**		**0.0603**	**0.0603**		**0.0560**	**0.0560**	**0.0000**	**98.8285**	**98.8285**	**0.0294**	**0.0000**	**99.5644**

3.5 Building Construction - Residential - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.8300e-003	0.2457	0.0690	2.3000e-004	7.8000e-004	2.7000e-004	1.0500e-003	2.4000e-004	2.5000e-004	4.9000e-004	0.0000	22.7159	22.7159	3.7400e-003	0.0000	22.8095
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.8300e-003**	**0.2457**	**0.0690**	**2.3000e-004**	**7.8000e-004**	**2.7000e-004**	**1.0500e-003**	**2.4000e-004**	**2.5000e-004**	**4.9000e-004**	**0.0000**	**22.7159**	**22.7159**	**3.7400e-003**	**0.0000**	**22.8095**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1162	1.0667	0.6540	1.1300e-003		0.0603	0.0603		0.0560	0.0560	0.0000	98.8284	98.8284	0.0294	0.0000	99.5643
Total	**0.1162**	**1.0667**	**0.6540**	**1.1300e-003**		**0.0603**	**0.0603**		**0.0560**	**0.0560**	**0.0000**	**98.8284**	**98.8284**	**0.0294**	**0.0000**	**99.5643**

3.5 Building Construction - Residential - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.8300e-003	0.2457	0.0690	2.3000e-004	7.8000e-004	2.7000e-004	1.0500e-003	2.4000e-004	2.5000e-004	4.9000e-004	0.0000	22.7159	22.7159	3.7400e-003	0.0000	22.8095
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.8300e-003**	**0.2457**	**0.0690**	**2.3000e-004**	**7.8000e-004**	**2.7000e-004**	**1.0500e-003**	**2.4000e-004**	**2.5000e-004**	**4.9000e-004**	**0.0000**	**22.7159**	**22.7159**	**3.7400e-003**	**0.0000**	**22.8095**

3.5 Building Construction - Residential - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0472	0.4380	0.2850	5.1000e-004		0.0238	0.0238		0.0221	0.0221	0.0000	43.8303	43.8303	0.0132	0.0000	44.1604
Total	**0.0472**	**0.4380**	**0.2850**	**5.1000e-004**		**0.0238**	**0.0238**		**0.0221**	**0.0221**	**0.0000**	**43.8303**	**43.8303**	**0.0132**	**0.0000**	**44.1604**

3.5 Building Construction - Residential - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7700e-003	0.1074	0.0287	1.1000e-004	3.5000e-004	8.0000e-005	4.3000e-004	1.1000e-004	8.0000e-005	1.8000e-004	0.0000	10.2710	10.2710	1.5700e-003	0.0000	10.3101
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.7700e-003**	**0.1074**	**0.0287**	**1.1000e-004**	**3.5000e-004**	**8.0000e-005**	**4.3000e-004**	**1.1000e-004**	**8.0000e-005**	**1.8000e-004**	**0.0000**	**10.2710**	**10.2710**	**1.5700e-003**	**0.0000**	**10.3101**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0472	0.4380	0.2850	5.1000e-004		0.0238	0.0238		0.0221	0.0221	0.0000	43.8303	43.8303	0.0132	0.0000	44.1603
Total	**0.0472**	**0.4380**	**0.2850**	**5.1000e-004**		**0.0238**	**0.0238**		**0.0221**	**0.0221**	**0.0000**	**43.8303**	**43.8303**	**0.0132**	**0.0000**	**44.1603**

3.5 Building Construction - Residential - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7700e-003	0.1074	0.0287	1.1000e-004	3.5000e-004	8.0000e-005	4.3000e-004	1.1000e-004	8.0000e-005	1.8000e-004	0.0000	10.2710	10.2710	1.5700e-003	0.0000	10.3101
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.7700e-003**	**0.1074**	**0.0287**	**1.1000e-004**	**3.5000e-004**	**8.0000e-005**	**4.3000e-004**	**1.1000e-004**	**8.0000e-005**	**1.8000e-004**	**0.0000**	**10.2710**	**10.2710**	**1.5700e-003**	**0.0000**	**10.3101**

3.6 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.9338					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.9338**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-004	4.0000e-003	1.0700e-003	0.0000	1.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.3830	0.3830	6.0000e-005	0.0000	0.3844
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.0000e-004**	**4.0000e-003**	**1.0700e-003**	**0.0000**	**1.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.3830**	**0.3830**	**6.0000e-005**	**0.0000**	**0.3844**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.9338					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.9338**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Architectural Coating - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-004	4.0000e-003	1.0700e-003	0.0000	1.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	1.0000e-005	0.0000	0.3830	0.3830	6.0000e-005	0.0000	0.3844
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.0000e-004**	**4.0000e-003**	**1.0700e-003**	**0.0000**	**1.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.3830**	**0.3830**	**6.0000e-005**	**0.0000**	**0.3844**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Improve Destination Accessibility

Improve Pedestrian Network

Provide Traffic Calming Measures

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5971	2.9676	7.8731	0.0235	1.7877	0.0276	1.8153	0.4793	0.0259	0.5052	0.0000	2,167.123 9	2,167.123 9	0.1294	0.0000	2,170.357 8
Unmitigated	0.6413	3.2859	8.9466	0.0273	2.0909	0.0319	2.1228	0.5606	0.0300	0.5905	0.0000	2,513.648 3	2,513.648 3	0.1475	0.0000	2,517.336 8

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,649.20	1,584.72	1453.28	5,508,449	4,709,724
City Park	0.00	0.00	0.00		
Enclosed Parking with Elevator	0.00	0.00	0.00		
Health Club	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	1,649.20	1,584.72	1,453.28	5,508,449	4,709,724

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Enclosed Parking with Elevator	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Health Club	16.60	8.40	6.90	16.90	64.10	19.00	52	39	9
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
User Defined Recreational	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925
City Park	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925
Enclosed Parking with Elevator	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925
Health Club	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925
Parking Lot	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925
User Defined Recreational	0.548007	0.045751	0.200309	0.124119	0.017133	0.006025	0.018861	0.028423	0.002391	0.002469	0.004915	0.000672	0.000925

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install High Efficiency Lighting

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	535.6755	535.6755	0.0244	5.0500e-003	537.7889
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	605.0072	605.0072	0.0275	5.7000e-003	607.3941
NaturalGas Mitigated	0.0161	0.1382	0.0620	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	159.5705	159.5705	3.0600e-003	2.9300e-003	160.5187
NaturalGas Unmitigated	0.0161	0.1382	0.0620	8.8000e-004		0.0111	0.0111		0.0111	0.0111	0.0000	159.5705	159.5705	3.0600e-003	2.9300e-003	160.5187

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.83401e+006	0.0153	0.1306	0.0556	8.3000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	151.2336	151.2336	2.9000e-003	2.7700e-003	152.1323
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	156228	8.4000e-004	7.6600e-003	6.4300e-003	5.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004	0.0000	8.3369	8.3369	1.6000e-004	1.5000e-004	8.3864
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0161**	**0.1383**	**0.0620**	**8.8000e-004**		**0.0111**	**0.0111**		**0.0111**	**0.0111**	**0.0000**	**159.5705**	**159.5705**	**3.0600e-003**	**2.9200e-003**	**160.5187**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	2.83401e+006	0.0153	0.1306	0.0556	8.3000e-004		0.0106	0.0106		0.0106	0.0106	0.0000	151.2336	151.2336	2.9000e-003	2.7700e-003	152.1323
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	156228	8.4000e-004	7.6600e-003	6.4300e-003	5.0000e-005		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004	0.0000	8.3369	8.3369	1.6000e-004	1.5000e-004	8.3864
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0161**	**0.1383**	**0.0620**	**8.8000e-004**		**0.0111**	**0.0111**		**0.0111**	**0.0111**	**0.0000**	**159.5705**	**159.5705**	**3.0600e-003**	**2.9200e-003**	**160.5187**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	985874	284.8435	0.0130	2.6800e-003	285.9673
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	1.02242e+006	295.4034	0.0135	2.7800e-003	296.5689
Health Club	63163.7	18.2496	8.3000e-004	1.7000e-004	18.3216
Parking Lot	22534	6.5106	3.0000e-004	6.0000e-005	6.5363
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**605.0072**	**0.0276**	**5.6900e-003**	**607.3940**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	885996	255.9863	0.0117	2.4100e-003	256.9962
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking with Elevator	900291	260.1163	0.0118	2.4500e-003	261.1426
Health Club	54223.6	15.6666	7.1000e-004	1.5000e-004	15.7284
Parking Lot	13520.4	3.9064	1.8000e-004	4.0000e-005	3.9218
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**535.6755**	**0.0244**	**5.0500e-003**	**537.7889**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.2161	0.0298	2.5768	1.4000e-004		0.0141	0.0141		0.0141	0.0141	0.0000	4.1904	4.1904	4.1400e-003	0.0000	4.2938
Unmitigated	1.2161	0.0298	2.5768	1.4000e-004		0.0141	0.0141		0.0141	0.0141	0.0000	4.1904	4.1904	4.1400e-003	0.0000	4.2938

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0934					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0435					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0793	0.0298	2.5768	1.4000e-004		0.0141	0.0141		0.0141	0.0141	0.0000	4.1904	4.1904	4.1400e-003	0.0000	4.2938
Total	**1.2161**	**0.0298**	**2.5768**	**1.4000e-004**		**0.0141**	**0.0141**		**0.0141**	**0.0141**	**0.0000**	**4.1904**	**4.1904**	**4.1400e-003**	**0.0000**	**4.2938**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0934					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.0435					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0793	0.0298	2.5768	1.4000e-004		0.0141	0.0141		0.0141	0.0141	0.0000	4.1904	4.1904	4.1400e-003	0.0000	4.2938
Total	**1.2161**	**0.0298**	**2.5768**	**1.4000e-004**		**0.0141**	**0.0141**		**0.0141**	**0.0141**	**0.0000**	**4.1904**	**4.1904**	**4.1400e-003**	**0.0000**	**4.2938**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	88.2753	0.0200	0.0110	92.0542
Unmitigated	110.3441	0.0250	0.0138	115.0678

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	16.1582 / 10.1867	99.2042	0.0239	0.0133	103.7697
City Park	0 / 2.63317	8.4524	3.8000e-004	8.0000e-005	8.4857
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	0.441799 / 0.27078	2.6876	6.5000e-004	3.6000e-004	2.8123
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**110.3441**	**0.0250**	**0.0138**	**115.0677**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	12.9266 / 8.14935	79.3633	0.0192	0.0107	83.0158
City Park	0 / 2.10654	6.7619	3.1000e-004	6.0000e-005	6.7886
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	0.353439 / 0.216624	2.1501	5.2000e-004	2.9000e-004	2.2499
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**88.2753**	**0.0200**	**0.0110**	**92.0542**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	15.9196	0.9408	0.0000	39.4401
Unmitigated	31.8391	1.8816	0.0000	78.8801

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	114.08	23.1572	1.3686	0.0000	57.3710
City Park	0.19	0.0386	2.2800e-003	0.0000	0.0956
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Health Club	42.58	8.6434	0.5108	0.0000	21.4136
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**31.8391**	**1.8816**	**0.0000**	**78.8801**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	57.04	11.5786	0.6843	0.0000	28.6855
City Park	0.095	0.0193	1.1400e-003	0.0000	0.0478
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Health Club	21.29	4.3217	0.2554	0.0000	10.7068
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		**15.9196**	**0.9408**	**0.0000**	**39.4401**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Solana Torrance Project - Construction Health Risk Assessment Area Source
Annual Exhaust PM10 from Onsite Emissions (Equipment and 1,000 feet for Trucks)

UNMITIGATED SCENARIO

Total	**0.1483**	tons during overall construction
	296.60	lbs during overall construction
	118.64	lbs/yr
	0.059	lbs/hr
	8	hours/day
	2.5	year
	630	total days
	5040	total hours

Emissions from CalEEMod 2016.3.2:

	Exhaust PM10 Tons per Year
2018	0.0638
2019	0.0606
2020	0.0239
Total	***0.1483***

MITIGATED SCENARIO

Same as unmitigated

APPENDIX B

AERMOD Output Files and Risk Estimates

```
**
****************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.5.0
** Lakes Environmental Software Inc.
** Date: 2/26/2018
** File: C:\Lakes\AERMOD View\SolanaTorrance\SolanaTorrance.ADI
**
****************************************
**
**
****************************************
** AERMOD Control Pathway
****************************************
**
**
CO STARTING
   TITLEONE C:\Lakes\AERMOD View\SolanaTorrance\SolanaTorrance.isc
   MODELOPT DFAULT CONC
   AVERTIME 1 PERIOD
   URBANOPT 9818605 Los_Angeles_County
   POLLUTID PM_10
   RUNORNOT RUN
   ERRORFIL SolanaTorrance.err
CO FINISHED
**
****************************************
** AERMOD Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   374858.355  3740635.628       64.210
** DESCRSRC Construction_Area
** Source Parameters **
   SRCPARAM PAREA1       0.0000410048     5.000        22     1.000
   AREAVERT PAREA1       374858.355 3740635.628 374862.550 3740629.103
   AREAVERT PAREA1       374856.956 3740622.577 374820.135 3740628.170
   AREAVERT PAREA1       374814.541 3740622.111 374785.177 3740627.238
   AREAVERT PAREA1       374758.143 3740607.662 374743.228 3740603.933
   AREAVERT PAREA1       374720.855 3740596.942 374716.661 3740568.976
   AREAVERT PAREA1       374721.322 3740559.188 374760.008 3740544.272
   AREAVERT PAREA1       374819.669 3740538.213 374870.473 3740515.840
   AREAVERT PAREA1       374927.804 3740483.679 374979.541 3740479.951
   AREAVERT PAREA1       375003.778 3740497.662 374992.125 3740510.247
   AREAVERT PAREA1       374956.236 3740566.645 374930.134 3740623.509
   AREAVERT PAREA1       374908.227 3740618.848 374885.389 3740623.043
   URBANSRC ALL

** Variable Emissions Type: "By Season / Hour / Seven Days (SHRDOW7)"
** Variable Emission Scenario: "Scenario 2"
```

```
** Season = Winter;  Day of Week = Monday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Spring;  Day of Week = Monday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Summer;  Day of Week = Monday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Fall;  Day of Week = Monday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Winter;  Day of Week = Tuesday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Spring;  Day of Week = Tuesday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Summer;  Day of Week = Tuesday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Fall;  Day of Week = Tuesday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Winter;  Day of Week = Wednesday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Spring;  Day of Week = Wednesday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Summer;  Day of Week = Wednesday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Fall;  Day of Week = Wednesday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Winter;  Day of Week = Thursday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Spring;  Day of Week = Thursday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
```

```
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Summer;  Day of Week = Thursday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Fall;  Day of Week = Thursday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Winter;  Day of Week = Friday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Spring;  Day of Week = Friday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Summer;  Day of Week = Friday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Fall;  Day of Week = Friday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0
   EMISFACT PAREA1       SHRDOW7 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Winter;  Day of Week = Saturday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Spring;  Day of Week = Saturday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Summer;  Day of Week = Saturday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Fall;  Day of Week = Saturday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Winter;  Day of Week = Sunday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Spring;  Day of Week = Sunday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
** Season = Summer;  Day of Week = Sunday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
```

```
** Season = Fall;  Day of Week = Sunday
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       SHRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   SRCGROUP ALL
SO FINISHED
**
****************************************
** AERMOD Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED SolanaTorrance.rou
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE KHHR_V9_ADJU\KHHR_v9.SFC
   PROFFILE KHHR_V9_ADJU\KHHR_v9.PFL
   SURFDATA 3167 2012
   UAIRDATA 3190 2012
   PROFBASE 19.0 METERS
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST SOLANATORRANCE.AD\01H1GALL.PLT 31
   PLOTFILE PERIOD ALL SOLANATORRANCE.AD\PE00GALL.PLT 32
   SUMMFILE SolanaTorrance.sum
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of             0 Fatal Error Message(s)
 A Total of             2 Warning Message(s)
 A Total of             0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
```

```
                 ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186     190       MEOPEN: THRESH_1MIN 1-min ASOS wind speed
threshold used           0.50
 ME W187     190       MEOPEN: ADJ_U* Option for Low Winds used in AERMET

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** MODEL SETUP OPTIONS SUMMARY ***

- -

**Model Is Setup For Calculation of Average CONCentration Values.

-- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses URBAN Dispersion Algorithm for the SBL for   1 Source(s),
for Total of   1 Urban Area(s):
Urban Population =   9818605.0 ; Urban Roughness Length = 1.000 m

**Model Uses Regulatory DEFAULT Options:
1. Stack-tip Downwash.
2. Model Accounts for ELEVated Terrain Effects.
3. Use Calms Processing Routine.
4. Use Missing Data Processing Routine.
5. No Exponential Decay.
6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
ADJ_U*   - Use ADJ_U* BETA option for SBL in AERMET
CCVR_Sub - Meteorological data includes CCVR substitutions
TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: PM_10

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates PERIOD Averages

**This Run Includes: 1 Source(s);   1 Source Group(s); and 759 Receptor(s)

with: 0 POINT(s), including
0 POINTCAP(s) and   0 POINTHOR(s)
and: 0 VOLUME source(s)
and: 1 AREA type source(s)
and: 0 LINE source(s)
and: 0 OPENPIT source(s)

```
                   and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  16216

 **Output Options Selected:
          Model Outputs Tables of PERIOD Averages by Receptor
          Model Outputs Tables of Highest Short Term Values by Receptor
(RECTABLE Keyword)
          Model Outputs External File(s) of High Values for Plotting
(PLOTFILE Keyword)
          Model Outputs Separate Summary File of High Ranked Values
(SUMMFILE Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for
Calm Hours
                                                                 m for
Missing Hours
                                                                 b for
Both Calm and Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =    19.00 ;
Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC
;  Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.6 MB of RAM.

 **Detailed Error/Message File:   SolanaTorrance.err
 **File for Summary of Results:   SolanaTorrance.sum
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	LOCATION OF AREA Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
PAREA1	0	0.41005E-04	374858.4	3740635.6	64.2	5.00	22	1.00	YES	SHRDOW7

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	PAREA1 ,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	9818605.	PAREA1 ,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

* SOURCE EMISSION RATE SCALARS WHICH VARY SEASONALLY, DIURNALLY AND BY DAY OF WEEK (SHRDOW7) *

SOURCE ID = PAREA1   ; SOURCE TYPE = AREAPOLY :

```
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR
SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                                              SEASON = WINTER;  DAY OF
WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5
.0000E+00    6  .0000E+00    7  .0000E+00    8  .1000E+01
    9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .0000E+00   13
.1000E+01   14  .1000E+01   15  .1000E+01   16  .1000E+01
   17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21
.0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              SEASON = SPRING;  DAY OF
WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5
.0000E+00    6  .0000E+00    7  .0000E+00    8  .1000E+01
    9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .0000E+00   13
.1000E+01   14  .1000E+01   15  .1000E+01   16  .1000E+01
   17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21
.0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              SEASON = SUMMER;  DAY OF
WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5
.0000E+00    6  .0000E+00    7  .0000E+00    8  .1000E+01
    9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .0000E+00   13
.1000E+01   14  .1000E+01   15  .1000E+01   16  .1000E+01
   17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21
.0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              SEASON =  FALL ;  DAY OF
WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5
.0000E+00    6  .0000E+00    7  .0000E+00    8  .1000E+01
    9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .0000E+00   13
.1000E+01   14  .1000E+01   15  .1000E+01   16  .1000E+01
   17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21
.0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                              SEASON = WINTER;  DAY OF
WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5
.0000E+00    6  .0000E+00    7  .0000E+00    8  .1000E+01
    9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .0000E+00   13
.1000E+01   14  .1000E+01   15  .1000E+01   16  .1000E+01
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   17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21
.0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                                 SEASON = SPRING;  DAY OF
WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5
.0000E+00    6  .0000E+00    7  .0000E+00    8  .1000E+01
    9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .0000E+00   13
.1000E+01   14  .1000E+01   15  .1000E+01   16  .1000E+01
   17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21
.0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                                 SEASON = SUMMER;  DAY OF
WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5
.0000E+00    6  .0000E+00    7  .0000E+00    8  .1000E+01
    9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .0000E+00   13
.1000E+01   14  .1000E+01   15  .1000E+01   16  .1000E+01
   17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21
.0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                                 SEASON =  FALL ;  DAY OF
WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5
.0000E+00    6  .0000E+00    7  .0000E+00    8  .1000E+01
    9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .0000E+00   13
.1000E+01   14  .1000E+01   15  .1000E+01   16  .1000E+01
   17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21
.0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                                 SEASON = WINTER;  DAY OF
WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5
.0000E+00    6  .0000E+00    7  .0000E+00    8  .1000E+01
    9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .0000E+00   13
.1000E+01   14  .1000E+01   15  .1000E+01   16  .1000E+01
   17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21
.0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                                 SEASON = SPRING;  DAY OF
WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5
.0000E+00    6  .0000E+00    7  .0000E+00    8  .1000E+01
    9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .0000E+00   13
.1000E+01   14  .1000E+01   15  .1000E+01   16  .1000E+01
   17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21
.0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                                 SEASON = SUMMER;  DAY OF
WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5
.0000E+00    6  .0000E+00    7  .0000E+00    8  .1000E+01
    9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .0000E+00   13
.1000E+01   14  .1000E+01   15  .1000E+01   16  .1000E+01
   17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21
.0000E+00   22  .0000E+00   23  .0000E+00   24  .0000E+00
                                                 SEASON =  FALL ;  DAY OF
WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5
.0000E+00    6  .0000E+00    7  .0000E+00    8  .1000E+01
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9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .0000E+00 13
.1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21
.0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00
SEASON = WINTER; DAY OF
WEEK = THURSDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5
.0000E+00 6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .0000E+00 13
.1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21
.0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00
SEASON = SPRING; DAY OF
WEEK = THURSDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5
.0000E+00 6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .0000E+00 13
.1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21
.0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00
SEASON = SUMMER; DAY OF
WEEK = THURSDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5
.0000E+00 6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .0000E+00 13
.1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21
.0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00
SEASON = FALL ; DAY OF
WEEK = THURSDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5
.0000E+00 6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .0000E+00 13
.1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21
.0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00
SEASON = WINTER; DAY OF
WEEK = FRIDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5
.0000E+00 6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .0000E+00 13
.1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21
.0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00
SEASON = SPRING; DAY OF
WEEK = FRIDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5
.0000E+00 6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .0000E+00 13
.1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21
.0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00
SEASON = SUMMER; DAY OF
WEEK = FRIDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5
.0000E+00 6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .0000E+00 13
.1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21
.0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00
SEASON = FALL ; DAY OF
WEEK = FRIDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5
.0000E+00 6 .0000E+00 7 .0000E+00 8 .1000E+01
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .0000E+00 13
.1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21
.0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00
SEASON = WINTER; DAY OF
WEEK = SATURDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5
.0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13
.0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21
.0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00
SEASON = SPRING; DAY OF
WEEK = SATURDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5
.0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13
.0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21
.0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00
SEASON = SUMMER; DAY OF
WEEK = SATURDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5
.0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13
.0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21
.0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00
SEASON = FALL ; DAY OF
WEEK = SATURDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5
.0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13
.0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21
.0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00
SEASON = WINTER; DAY OF
WEEK = SUNDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5
.0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13
.0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21
.0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

SEASON = SPRING; DAY OF
WEEK = SUNDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5
.0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13
.0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21
.0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00
SEASON = SUMMER; DAY OF
WEEK = SUNDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5
.0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13
.0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21
.0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00
SEASON = FALL ; DAY OF
WEEK = SUNDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5
.0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13
.0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21
.0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: UCART1   ; NETWORK TYPE: GRIDCART ***

*** X-COORDINATES OF GRID ***
(METERS)

373836.3, 373936.3, 374036.3, 374136.3, 374236.3, 374336.3,
374436.3, 374536.3, 374636.3, 374736.3,
374836.3, 374936.3, 375036.3, 375136.3, 375236.3, 375336.3,
375436.3, 375536.3, 375636.3, 375736.3,
375836.3,

*** Y-COORDINATES OF GRID ***
(METERS)

3739578.7, 3739678.7, 3739778.7, 3739878.7, 3739978.7, 3740078.7,
3740178.7, 3740278.7, 3740378.7, 3740478.7,
3740578.7, 3740678.7, 3740778.7, 3740878.7, 3740978.7, 3741078.7,
3741178.7, 3741278.7, 3741378.7, 3741478.7,
3741578.7,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

* ELEVATION HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS) 373836.30	373936.30	374036.30	374136.30	374236.30	374336.30	374436.30	374536.30	374636.30
3741578.70	36.00	32.40	31.40	31.70	28.00	25.10	24.70	24.50	24.70
3741478.70	54.80	46.20	40.00	35.50	32.80	29.80	26.70	26.00	26.00
3741378.70	91.90	79.60	64.70	48.20	39.40	33.10	29.90	28.70	28.20
3741278.70	105.10	104.30	98.90	81.40	53.90	39.90	32.40	30.70	30.40
3741178.70	116.40	115.90	111.10	105.80	88.80	53.90	40.30	34.80	33.40
3741078.70	123.90	119.70	115.60	110.10	105.90	80.20	48.60	42.50	38.40
3740978.70	125.30	121.40	119.00	115.50	110.40	101.30	73.00	48.10	44.00
3740878.70	127.50	122.90	121.40	118.50	114.50	104.00	82.30	65.50	54.10
3740778.70	133.50	130.00	126.30	123.30	119.00	111.70	84.30	83.90	70.10
3740678.70	140.80	138.30	133.40	127.30	120.80	112.40	115.60	101.60	78.80
3740578.70	141.50	142.80	142.90	134.80	128.90	124.10	116.30	106.00	101.10
3740478.70	131.20	129.40	132.20	136.30	137.00	130.50	124.10	122.30	119.70
3740378.70	123.80	119.50	118.30	125.40	127.20	125.90	128.00	134.70	134.50
3740278.70	124.40	134.70	125.60	108.60	96.60	90.70	99.40	112.40	103.60
3740178.70	126.50	131.80	133.60	132.70	127.60	126.00	105.00	83.00	80.70
3740078.70	130.50	129.80	122.80	116.90	112.90	110.00	96.70	94.50	103.40

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  3739978.70 |       143.30      140.60      140.20      138.40
135.10      130.90      123.60      120.00      116.90
  3739878.70 |       152.80      152.40      149.90      146.70
141.60      133.50      126.60      121.70      117.80
  3739778.70 |       161.50      163.70      160.20      154.50
145.90      138.30      131.30      123.40      118.30
  3739678.70 |       173.40      170.70      168.30      162.50
150.00      139.40      131.10      118.20      103.00
  3739578.70 |       183.60      178.80      169.70      158.50
147.90      132.40      109.20      104.60      120.10
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*** AERMOD - VERSION 16216r *** *** C:\Lakes\AERMOD View\SolanaTorrance\SolanaTorrance.isc *** 02/26/18
*** AERMET - VERSION 16216 *** *** *** 15:59:23

PAGE 8
*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

* ELEVATION HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS) 374736.30	374836.30	374936.30	375036.30	375136.30	375236.30	375336.30	375436.30	375536.30
3741578.70	24.80	25.30	25.40	25.70	25.50	25.90	26.30	26.30	26.00
3741478.70	27.00	27.50	27.50	27.90	27.00	27.30	27.60	27.80	27.00
3741378.70	28.20	29.00	29.60	29.30	29.30	29.40	29.30	29.40	29.30
3741278.70	30.50	30.90	31.20	31.20	31.50	31.80	31.60	30.90	31.50
3741178.70	33.00	33.00	33.30	33.40	33.60	33.90	33.60	33.30	33.30
3741078.70	36.70	36.00	35.50	36.00	36.10	36.00	35.70	35.70	35.80
3740978.70	41.10	38.30	37.60	38.50	38.50	38.20	37.90	37.30	37.90
3740878.70	45.90	42.00	40.90	40.90	40.90	40.60	40.30	39.80	39.40
3740778.70	53.70	46.20	44.30	43.40	43.40	43.10	42.80	42.10	40.90
3740678.70	73.00	59.90	50.30	47.10	46.10	45.80	45.20	44.00	42.60
3740578.70	65.10	48.90	61.80	49.00	49.20	48.90	47.60	45.80	43.60
3740478.70	122.20	111.30	73.90	56.30	53.20	51.90	49.50	47.60	45.20
3740378.70	131.50	127.70	122.30	79.90	59.20	55.90	53.00	50.10	47.70
3740278.70	99.40	107.10	119.60	102.40	64.70	60.40	58.60	59.20	52.30
3740178.70	77.30	76.60	77.00	69.60	61.80	77.00	67.50	64.00	60.10
3740078.70	88.40	72.70	70.80	65.70	89.40	110.40	87.20	87.20	71.00

3739978.70 | 112.90   96.00   90.30   69.10
109.40   126.40   120.60   98.50   85.10
3739878.70 | 115.60   105.80   90.30   73.50
77.80   120.60   119.80   102.70   85.10
3739778.70 | 116.20   103.20   88.80   75.70
78.40   109.10   114.00   103.50   93.60
3739678.70 | 114.40   107.00   92.50   78.00
98.90   105.50   111.50   115.20   101.80
3739578.70 | 115.00   102.30   95.50   81.70
84.30   101.80   114.40   117.00   112.20

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

* ELEVATION HEIGHTS IN METERS *

Y-COORD (METERS)	X-COORD (METERS) 375636.30	375736.30	375836.30
3741578.70	25.40	25.50	25.10
3741478.70	26.40	27.00	26.70
3741378.70	28.40	27.80	27.30
3741278.70	30.00	29.70	27.90
3741178.70	32.40	30.90	30.20
3741078.70	34.60	33.00	31.50
3740978.70	36.60	35.00	33.30
3740878.70	38.20	36.80	35.30
3740778.70	39.50	38.30	36.50
3740678.70	40.80	38.70	37.00
3740578.70	41.70	39.60	37.40
3740478.70	42.60	41.10	38.90
3740378.70	44.10	42.50	41.20
3740278.70	47.40	44.30	43.00
3740178.70	58.00	48.60	46.70
3740078.70	56.10	61.10	59.70
3739978.70	60.50	61.70	61.50
3739878.70	63.90	65.20	56.80
3739778.70	85.60	75.10	57.20
3739678.70	96.60	93.70	85.50
3739578.70	104.60	96.10	87.40

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

* HILL HEIGHT SCALES IN METERS *

Y-COORD (METERS)	X-COORD (METERS) 373836.30	373936.30	374036.30	374136.30	374236.30	374336.30	374436.30	374536.30	374636.30
3741578.70	255.30	255.30	254.80	144.60	144.60	144.60	144.50	144.50	144.50
3741478.70	144.60	144.60	254.80	255.20	254.80	251.80	144.60	144.50	144.50
3741378.70	129.60	131.90	144.50	144.60	255.30	255.40	255.30	144.60	144.50
3741278.70	126.20	123.00	119.10	129.70	144.60	255.60	255.60	255.30	252.10
3741178.70	124.40	115.90	111.10	106.10	120.00	254.80	255.60	255.60	255.30
3741078.70	123.90	119.70	115.60	110.10	105.90	144.50	255.60	255.60	255.50
3740978.70	125.30	121.40	119.00	115.50	110.40	113.40	144.50	255.60	255.60
3740878.70	127.50	122.90	121.40	118.50	114.50	119.60	144.50	254.80	255.40
3740778.70	133.50	130.00	144.40	123.30	119.00	118.30	144.50	144.50	144.50
3740678.70	140.80	143.80	144.50	144.50	143.00	137.90	117.60	138.40	144.50
3740578.70	141.50	142.80	142.90	134.80	136.60	136.00	138.20	138.40	138.40
3740478.70	255.60	255.50	144.50	136.30	137.00	136.10	138.20	138.20	138.40
3740378.70	255.60	255.60	255.60	255.30	137.30	136.70	138.10	138.20	137.70
3740278.70	255.60	255.60	255.60	255.60	255.60	255.60	255.60	138.20	138.40
3740178.70	255.60	255.60	255.60	255.60	255.60	254.80	255.60	255.60	255.60
3740078.70	255.60	255.60	255.60	255.60	255.60	255.60	255.60	255.60	255.20

3739978.70	255.60	255.60	255.60	255.60	255.60	255.40	255.30	252.70	116.90
3739878.70	255.60	255.60	255.60	255.60	255.60	255.60	255.30	254.50	117.80
3739778.70	255.60	255.60	255.60	255.60	255.60	255.40	255.30	254.80	118.30
3739678.70	255.60	255.60	255.60	255.30	255.40	255.50	255.30	255.60	255.60
3739578.70	255.60	255.60	255.60	255.60	255.60	255.60	255.60	255.60	120.10

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

* HILL HEIGHT SCALES IN METERS *

Y-COORD (METERS)	X-COORD (METERS) 374736.30	374836.30	374936.30	375036.30	375136.30	375236.30	375336.30	375436.30	375536.30
3741578.70	138.40	110.70	25.40	25.70	25.50	25.90	26.30	26.30	26.00
3741478.70	144.50	138.40	138.40	138.40	138.40	27.30	27.60	27.80	27.00
3741378.70	144.50	144.40	138.40	138.40	138.40	138.40	138.40	29.40	29.30
3741278.70	144.50	144.50	138.40	138.40	138.40	138.40	138.40	138.40	31.50
3741178.70	144.50	144.50	144.40	138.40	138.40	138.40	138.40	138.40	138.40
3741078.70	254.80	144.50	144.50	138.40	138.40	138.40	138.40	138.40	138.40
3740978.70	255.30	254.30	144.50	138.40	138.40	138.40	138.40	138.40	138.40
3740878.70	255.50	255.30	144.50	138.40	138.40	138.40	138.40	138.40	138.40
3740778.70	255.40	255.40	254.00	138.40	138.40	138.40	138.40	138.40	138.40
3740678.70	140.60	144.40	254.00	138.40	138.40	138.40	138.40	138.40	138.40
3740578.70	255.50	255.60	138.40	138.40	138.40	138.40	138.40	138.40	138.40
3740478.70	138.40	138.40	138.40	138.40	138.40	138.40	138.40	138.40	138.40
3740378.70	137.50	138.40	138.40	138.40	138.40	138.40	138.40	138.40	138.40
3740278.70	138.40	138.40	125.50	138.40	138.40	138.40	138.40	138.40	138.40
3740178.70	255.60	255.50	138.40	138.40	138.40	138.40	138.40	138.40	137.40
3740078.70	255.60	255.60	255.50	255.30	136.80	127.30	127.30	127.30	127.30

3739978.70	112.90	118.50	127.30	255.20	127.30	126.40	126.30	127.30	127.30
3739878.70	115.60	117.10	127.30	254.50	127.30	126.20	124.70	127.30	127.30
3739778.70	116.20	118.30	127.30	254.00	127.30	127.30	114.00	126.30	126.40
3739678.70	114.40	107.00	118.20	252.70	127.30	105.50	114.00	118.00	123.10
3739578.70	116.60	121.20	119.30	129.60	127.30	118.30	114.90	117.00	112.20

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

* HILL HEIGHT SCALES IN METERS *

Y-COORD (METERS)	X-COORD (METERS) 375636.30	375736.30	375836.30
3741578.70	25.40	25.50	25.10
3741478.70	26.40	27.00	26.70
3741378.70	28.40	27.80	27.30
3741278.70	30.00	29.70	27.90
3741178.70	32.40	30.90	30.20
3741078.70	34.60	33.00	31.50
3740978.70	138.40	35.00	33.30
3740878.70	138.40	36.80	35.30
3740778.70	138.40	138.40	36.50
3740678.70	138.40	138.40	37.00
3740578.70	138.40	138.40	127.30
3740478.70	138.40	138.40	127.30
3740378.70	138.40	138.40	127.30
3740278.70	138.40	136.80	127.30
3740178.70	127.30	127.30	127.30
3740078.70	127.30	127.30	127.30
3739978.70	127.30	127.30	127.30
3739878.70	127.30	127.30	127.30
3739778.70	126.30	126.40	127.30
3739678.70	123.70	123.70	123.70
3739578.70	123.70	123.70	123.70

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(374612.6, 3740352.2,   128.0,   138.2,   0.0);   (374632.6, 3740352.2,   127.4,   138.2,   0.0);
(374652.6, 3740352.2,   126.4,   138.2,   0.0);   (374672.6, 3740352.2,   125.5,   138.2,   0.0);
(374692.6, 3740352.2,   124.3,   138.4,   0.0);   (374712.6, 3740352.2,   123.4,   138.4,   0.0);
(374732.6, 3740352.2,   122.7,   138.4,   0.0);   (374752.6, 3740352.2,   122.6,   138.4,   0.0);
(374772.6, 3740352.2,   122.6,   138.4,   0.0);   (374792.6, 3740352.2,   122.2,   138.4,   0.0);
(374612.6, 3740372.2,   133.5,   138.1,   0.0);   (374632.6, 3740372.2,   133.1,   137.9,   0.0);
(374652.6, 3740372.2,   132.5,   137.8,   0.0);   (374672.6, 3740372.2,   131.9,   137.7,   0.0);
(374692.6, 3740372.2,   131.1,   137.5,   0.0);   (374712.6, 3740372.2,   130.5,   137.3,   0.0);
(374732.6, 3740372.2,   130.0,   138.0,   0.0);   (374752.6, 3740372.2,   129.5,   138.4,   0.0);
(374772.6, 3740372.2,   129.1,   138.4,   0.0);   (374792.6, 3740372.2,   127.8,   138.4,   0.0);
(374612.6, 3740392.2,   136.9,   137.7,   0.0);   (374632.6, 3740392.2,   136.6,   137.5,   0.0);
(374652.6, 3740392.2,   136.2,   137.2,   0.0);   (374672.6, 3740392.2,   135.9,   136.7,   0.0);
(374692.6, 3740392.2,   135.3,   136.3,   0.0);   (374712.6, 3740392.2,   134.8,   136.7,   0.0);
(374732.6, 3740392.2,   134.3,   136.5,   0.0);   (374752.6, 3740392.2,   133.6,   137.4,   0.0);
(374772.6, 3740392.2,   132.8,   138.0,   0.0);   (374612.6, 3740412.2,   137.6,   137.6,   0.0);
(374632.6, 3740412.2,   137.4,   137.7,   0.0);   (374652.6, 3740412.2,   137.2,   137.2,   0.0);
(374672.6, 3740412.2,   136.9,   136.9,   0.0);   (374692.6, 3740412.2,   136.4,   136.4,   0.0);
(374712.6, 3740412.2,   136.4,   136.4,   0.0);   (374732.6, 3740412.2,   136.6,   136.6,   0.0);
(374752.6, 3740412.2,   136.3,   136.3,   0.0);   (374612.6, 3740432.2,   134.3,   138.0,   0.0);
(374632.6, 3740432.2,   134.2,   137.9,   0.0);   (374652.6, 3740432.2,   133.9,   137.8,   0.0);

(374672.6, 3740432.2, 133.4, 137.6, 0.0); (
374692.6, 3740432.2, 133.0, 137.3, 0.0);
(374712.6, 3740432.2, 133.3, 137.4, 0.0); (
374732.6, 3740432.2, 135.5, 137.1, 0.0);
(374752.6, 3740432.2, 137.2, 137.2, 0.0); (
375092.6, 3740432.2, 57.5, 138.4, 0.0);
(374612.6, 3740452.2, 129.1, 138.2, 0.0); (
374632.6, 3740452.2, 128.5, 138.2, 0.0);
(374652.6, 3740452.2, 128.0, 138.2, 0.0); (
374672.6, 3740452.2, 127.2, 138.1, 0.0);
(374692.6, 3740452.2, 126.3, 138.4, 0.0); (
374712.6, 3740452.2, 126.8, 138.4, 0.0);
(374732.6, 3740452.2, 130.6, 138.4, 0.0); (
375092.6, 3740452.2, 55.4, 138.4, 0.0);
(374612.6, 3740472.2, 122.7, 138.2, 0.0); (
374632.6, 3740472.2, 121.9, 138.4, 0.0);
(375072.6, 3740472.2, 54.3, 138.4, 0.0); (
375092.6, 3740472.2, 54.1, 138.4, 0.0);
(374612.6, 3740492.2, 116.9, 138.4, 0.0); (
374632.6, 3740492.2, 116.0, 138.4, 0.0);
(375052.6, 3740492.2, 54.0, 138.4, 0.0); (
375072.6, 3740492.2, 53.2, 138.4, 0.0);
(375092.6, 3740492.2, 52.8, 138.4, 0.0); (
374612.6, 3740512.2, 113.0, 138.4, 0.0);
(374632.6, 3740512.2, 111.1, 138.4, 0.0); (
375052.6, 3740512.2, 51.9, 138.4, 0.0);
(375072.6, 3740512.2, 51.3, 138.4, 0.0); (
375092.6, 3740512.2, 51.2, 138.4, 0.0);
(374612.6, 3740532.2, 110.1, 138.4, 0.0); (
374632.6, 3740532.2, 107.0, 138.4, 0.0);
(375032.6, 3740532.2, 50.4, 253.5, 0.0); (
375052.6, 3740532.2, 49.8, 138.4, 0.0);
(375072.6, 3740532.2, 49.8, 138.4, 0.0); (
375092.6, 3740532.2, 50.0, 138.4, 0.0);
(374612.6, 3740552.2, 107.9, 138.4, 0.0); (
374632.6, 3740552.2, 104.1, 138.4, 0.0);
(375012.6, 3740552.2, 51.1, 253.5, 0.0); (
375032.6, 3740552.2, 49.5, 253.5, 0.0);
(375052.6, 3740552.2, 49.0, 138.4, 0.0); (
375072.6, 3740552.2, 49.1, 138.4, 0.0);
(375092.6, 3740552.2, 49.3, 138.4, 0.0); (
374612.6, 3740572.2, 105.1, 138.4, 0.0);
(374632.6, 3740572.2, 102.4, 138.4, 0.0); (
375012.6, 3740572.2, 49.9, 254.0, 0.0);
(375032.6, 3740572.2, 49.2, 251.8, 0.0); (
375052.6, 3740572.2, 48.8, 138.4, 0.0);
(375072.6, 3740572.2, 48.8, 138.4, 0.0); (
375092.6, 3740572.2, 48.9, 138.4, 0.0);
(374612.6, 3740592.2, 100.6, 138.4, 0.0); (
374632.6, 3740592.2, 99.2, 138.4, 0.0);

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(374652.6, 3740592.2, 97.7, 138.4, 0.0); (374672.6, 3740592.2, 93.8, 138.4, 0.0);
(375012.6, 3740592.2, 49.3, 252.7, 0.0); (375032.6, 3740592.2, 48.8, 138.4, 0.0);
(375052.6, 3740592.2, 48.5, 138.4, 0.0); (375072.6, 3740592.2, 48.4, 138.4, 0.0);
(375092.6, 3740592.2, 48.4, 138.4, 0.0); (374612.6, 3740612.2, 94.4, 138.4, 0.0);
(374632.6, 3740612.2, 93.7, 138.4, 0.0); (374652.6, 3740612.2, 93.3, 138.4, 0.0);
(374672.6, 3740612.2, 92.9, 138.4, 0.0); (374692.6, 3740612.2, 90.9, 138.4, 0.0);
(375012.6, 3740612.2, 49.0, 138.4, 0.0); (375032.6, 3740612.2, 48.5, 138.4, 0.0);
(375052.6, 3740612.2, 48.2, 138.4, 0.0); (375072.6, 3740612.2, 48.0, 138.4, 0.0);
(375092.6, 3740612.2, 48.0, 138.4, 0.0); (374612.6, 3740632.2, 88.4, 138.4, 0.0);
(374632.6, 3740632.2, 86.8, 138.4, 0.0); (374652.6, 3740632.2, 86.8, 138.4, 0.0);
(374672.6, 3740632.2, 87.0, 138.4, 0.0); (374692.6, 3740632.2, 87.0, 138.4, 0.0);
(374712.6, 3740632.2, 85.5, 138.4, 0.0); (374732.6, 3740632.2, 82.6, 138.4, 0.0);
(375012.6, 3740632.2, 48.7, 138.4, 0.0); (375032.6, 3740632.2, 48.2, 138.4, 0.0);
(375052.6, 3740632.2, 47.9, 138.4, 0.0); (375072.6, 3740632.2, 47.6, 138.4, 0.0);
(375092.6, 3740632.2, 47.5, 138.4, 0.0); (374612.6, 3740652.2, 86.2, 139.6, 0.0);
(374632.6, 3740652.2, 82.8, 143.2, 0.0); (374652.6, 3740652.2, 81.4, 141.0, 0.0);
(374672.6, 3740652.2, 80.3, 139.6, 0.0); (374692.6, 3740652.2, 80.8, 138.4, 0.0);
(374712.6, 3740652.2, 80.4, 138.4, 0.0); (374732.6, 3740652.2, 78.3, 138.4, 0.0);
(374752.6, 3740652.2, 76.0, 138.4, 0.0); (374772.6, 3740652.2, 72.8, 138.4, 0.0);
(374792.6, 3740652.2, 69.7, 138.4, 0.0); (374812.6, 3740652.2, 67.6, 138.4, 0.0);

(374832.6, 3740652.2, 65.2, 138.4, 0.0); (375012.6, 3740652.2, 48.3, 138.4, 0.0);
(375032.6, 3740652.2, 47.9, 138.4, 0.0); (375052.6, 3740652.2, 47.5, 138.4, 0.0);
(375072.6, 3740652.2, 47.3, 138.4, 0.0); (375092.6, 3740652.2, 47.2, 138.4, 0.0);
(374612.6, 3740672.2, 86.7, 138.4, 0.0); (374632.6, 3740672.2, 80.5, 144.4, 0.0);
(374652.6, 3740672.2, 76.0, 144.5, 0.0); (374672.6, 3740672.2, 75.8, 144.4, 0.0);
(374692.6, 3740672.2, 76.5, 143.2, 0.0); (374712.6, 3740672.2, 76.2, 139.5, 0.0);
(374732.6, 3740672.2, 74.3, 139.5, 0.0); (374752.6, 3740672.2, 72.5, 139.0, 0.0);
(374772.6, 3740672.2, 69.3, 141.0, 0.0); (374792.6, 3740672.2, 66.6, 143.2, 0.0);
(374812.6, 3740672.2, 64.8, 142.6, 0.0); (374892.6, 3740672.2, 53.0, 254.8, 0.0);
(374912.6, 3740672.2, 51.7, 254.5, 0.0); (374972.6, 3740672.2, 48.9, 142.6, 0.0);
(374992.6, 3740672.2, 48.3, 140.0, 0.0); (375012.6, 3740672.2, 48.1, 138.4, 0.0);
(375032.6, 3740672.2, 47.4, 138.4, 0.0); (375052.6, 3740672.2, 47.1, 138.4, 0.0);
(375072.6, 3740672.2, 46.8, 138.4, 0.0); (375092.6, 3740672.2, 46.6, 138.4, 0.0);
(374612.6, 3740692.2, 86.5, 138.4, 0.0); (374632.6, 3740692.2, 79.8, 144.4, 0.0);
(374652.6, 3740692.2, 72.3, 252.7, 0.0); (374672.6, 3740692.2, 69.8, 254.3, 0.0);
(374692.6, 3740692.2, 71.1, 144.5, 0.0); (374712.6, 3740692.2, 72.2, 144.4, 0.0);
(374732.6, 3740692.2, 71.5, 143.9, 0.0); (374752.6, 3740692.2, 69.9, 143.6, 0.0);
(374772.6, 3740692.2, 67.2, 143.9, 0.0); (374792.6, 3740692.2, 63.5, 144.5, 0.0);
(374812.6, 3740692.2, 60.2, 252.1, 0.0); (374832.6, 3740692.2, 56.3, 254.8, 0.0);
(374852.6, 3740692.2, 52.7, 255.3, 0.0); (374872.6, 3740692.2, 50.8, 255.3, 0.0);
(374892.6, 3740692.2, 50.1, 255.2, 0.0); (374912.6, 3740692.2, 49.9, 254.8, 0.0);
(374972.6, 3740692.2, 48.4, 143.2, 0.0); (374992.6, 3740692.2, 47.7, 140.6, 0.0);
(375052.6, 3740692.2, 46.4, 138.4, 0.0); (375072.6, 3740692.2, 46.1, 138.4, 0.0);
(375092.6, 3740692.2, 46.0, 138.4, 0.0); (374612.6, 3740712.2, 84.4, 140.6, 0.0);
(374632.6, 3740712.2, 78.5, 144.5, 0.0); (374652.6, 3740712.2, 72.3, 144.5, 0.0);

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(374672.6, 3740712.2, 66.8, 254.9, 0.0); (374692.6, 3740712.2, 64.9, 255.0, 0.0);
(374712.6, 3740712.2, 66.8, 251.8, 0.0); (374732.6, 3740712.2, 67.8, 144.5, 0.0);
(374752.6, 3740712.2, 66.4, 144.5, 0.0); (374772.6, 3740712.2, 63.0, 144.5, 0.0);
(374792.6, 3740712.2, 58.6, 254.8, 0.0); (374812.6, 3740712.2, 54.4, 255.3, 0.0);
(374832.6, 3740712.2, 51.1, 255.3, 0.0); (374852.6, 3740712.2, 49.5, 255.3, 0.0);
(374872.6, 3740712.2, 48.8, 255.3, 0.0); (374892.6, 3740712.2, 48.6, 255.3, 0.0);
(374912.6, 3740712.2, 48.5, 254.8, 0.0); (374972.6, 3740712.2, 47.3, 143.9, 0.0);
(374992.6, 3740712.2, 46.7, 141.8, 0.0); (375012.6, 3740712.2, 46.3, 138.5, 0.0);
(375032.6, 3740712.2, 45.9, 138.4, 0.0); (375052.6, 3740712.2, 45.6, 138.4, 0.0);
(375072.6, 3740712.2, 45.4, 138.4, 0.0); (375092.6, 3740712.2, 45.4, 138.4, 0.0);
(374612.6, 3740732.2, 81.9, 144.2, 0.0); (374632.6, 3740732.2, 76.7, 144.5, 0.0);
(374652.6, 3740732.2, 71.7, 144.5, 0.0); (374672.6, 3740732.2, 66.5, 254.5, 0.0);
(374692.6, 3740732.2, 62.1, 255.3, 0.0); (374712.6, 3740732.2, 62.2, 255.0, 0.0);
(374732.6, 3740732.2, 63.3, 253.1, 0.0); (374752.6, 3740732.2, 61.8, 253.1, 0.0);
(374772.6, 3740732.2, 57.8, 254.9, 0.0); (374792.6, 3740732.2, 54.1, 255.3, 0.0);
(374812.6, 3740732.2, 50.9, 255.4, 0.0); (374832.6, 3740732.2, 49.0, 255.4, 0.0);
(374852.6, 3740732.2, 48.2, 255.3, 0.0); (374872.6, 3740732.2, 47.7, 255.3, 0.0);
(374892.6, 3740732.2, 47.4, 255.3, 0.0); (374912.6, 3740732.2, 47.1, 254.9, 0.0);
(374612.6, 3740752.2, 78.8, 144.5, 0.0); (374632.6, 3740752.2, 74.5, 144.5, 0.0);
(374652.6, 3740752.2, 70.4, 144.5, 0.0); (374672.6, 3740752.2, 66.2, 254.0, 0.0);

(374692.6, 3740752.2, 62.0, 255.2, 0.0); (374712.6, 3740752.2, 59.5, 255.3, 0.0);
(374732.6, 3740752.2, 58.8, 255.2, 0.0); (374752.6, 3740752.2, 56.9, 255.3, 0.0);
(374772.6, 3740752.2, 53.9, 255.3, 0.0); (374792.6, 3740752.2, 51.2, 255.4, 0.0);
(374812.6, 3740752.2, 49.1, 255.5, 0.0); (374832.6, 3740752.2, 48.0, 255.4, 0.0);
(374852.6, 3740752.2, 47.3, 255.3, 0.0); (374872.6, 3740752.2, 46.7, 255.3, 0.0);
(374892.6, 3740752.2, 46.2, 255.3, 0.0); (374912.6, 3740752.2, 45.9, 254.9, 0.0);
(374952.6, 3740752.2, 45.4, 252.7, 0.0); (374972.6, 3740752.2, 45.1, 144.4, 0.0);
(374992.6, 3740752.2, 44.8, 143.9, 0.0); (375012.6, 3740752.2, 44.5, 140.6, 0.0);
(375032.6, 3740752.2, 44.5, 138.4, 0.0); (375052.6, 3740752.2, 44.2, 138.4, 0.0);
(375072.6, 3740752.2, 44.2, 138.4, 0.0); (375092.6, 3740752.2, 44.2, 138.4, 0.0);
(374612.6, 3740772.2, 74.9, 144.5, 0.0); (374632.6, 3740772.2, 71.8, 144.5, 0.0);
(374652.6, 3740772.2, 68.3, 144.5, 0.0); (374672.6, 3740772.2, 64.4, 254.3, 0.0);
(374692.6, 3740772.2, 60.8, 255.0, 0.0); (374712.6, 3740772.2, 57.2, 255.3, 0.0);
(374732.6, 3740772.2, 54.9, 255.3, 0.0); (374752.6, 3740772.2, 53.3, 255.3, 0.0);
(374772.6, 3740772.2, 51.0, 255.5, 0.0); (374792.6, 3740772.2, 49.3, 255.5, 0.0);
(374812.6, 3740772.2, 47.8, 255.5, 0.0); (374832.6, 3740772.2, 46.8, 255.4, 0.0);
(374852.6, 3740772.2, 45.8, 255.3, 0.0); (374872.6, 3740772.2, 45.3, 255.3, 0.0);
(374892.6, 3740772.2, 44.9, 255.2, 0.0); (374912.6, 3740772.2, 44.7, 254.9, 0.0);
(374952.6, 3740772.2, 44.5, 251.8, 0.0); (374972.6, 3740772.2, 44.3, 144.5, 0.0);
(374992.6, 3740772.2, 44.1, 144.2, 0.0); (375012.6, 3740772.2, 43.8, 141.8, 0.0);
(375032.6, 3740772.2, 43.6, 138.4, 0.0); (375052.6, 3740772.2, 43.6, 138.4, 0.0);
(375072.6, 3740772.2, 43.6, 138.4, 0.0); (375092.6, 3740772.2, 43.6, 138.4, 0.0);
(374612.6, 3740792.2, 70.3, 144.5, 0.0); (374632.6, 3740792.2, 68.2, 144.5, 0.0);
(374652.6, 3740792.2, 65.0, 254.0, 0.0); (374672.6, 3740792.2, 61.9, 254.8, 0.0);
(374712.6, 3740792.2, 55.4, 255.3, 0.0); (374732.6, 3740792.2, 52.6, 255.5, 0.0);

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(374752.6, 3740792.2, 50.5, 255.5, 0.0); (374772.6, 3740792.2, 49.0, 255.5, 0.0);
(374792.6, 3740792.2, 47.6, 255.5, 0.0); (374832.6, 3740792.2, 45.4, 255.4, 0.0);
(374852.6, 3740792.2, 44.5, 255.3, 0.0); (374872.6, 3740792.2, 44.0, 255.3, 0.0);
(374892.6, 3740792.2, 43.7, 255.2, 0.0); (374912.6, 3740792.2, 43.7, 254.8, 0.0);
(374952.6, 3740792.2, 43.6, 144.5, 0.0); (374972.6, 3740792.2, 43.6, 144.5, 0.0);
(374992.6, 3740792.2, 43.3, 144.2, 0.0); (375012.6, 3740792.2, 43.2, 142.6, 0.0);
(375032.6, 3740792.2, 43.1, 138.4, 0.0); (375052.6, 3740792.2, 42.9, 138.4, 0.0);
(375072.6, 3740792.2, 43.0, 138.4, 0.0); (375092.6, 3740792.2, 43.0, 138.4, 0.0);
(374612.6, 3740812.2, 65.4, 254.8, 0.0); (374632.6, 3740812.2, 63.4, 254.8, 0.0);
(374652.6, 3740812.2, 61.7, 254.9, 0.0); (374692.6, 3740812.2, 56.4, 255.3, 0.0);
(374712.6, 3740812.2, 53.3, 255.4, 0.0); (374732.6, 3740812.2, 50.7, 255.5, 0.0);
(374752.6, 3740812.2, 48.8, 255.5, 0.0); (374772.6, 3740812.2, 47.4, 255.5, 0.0);
(374792.6, 3740812.2, 45.7, 255.6, 0.0); (374812.6, 3740812.2, 44.8, 255.5, 0.0);
(374832.6, 3740812.2, 44.2, 255.4, 0.0); (374852.6, 3740812.2, 43.6, 255.3, 0.0);
(374872.6, 3740812.2, 43.3, 255.3, 0.0); (374892.6, 3740812.2, 43.0, 255.0, 0.0);
(374912.6, 3740812.2, 42.9, 254.8, 0.0); (374952.6, 3740812.2, 43.0, 144.5, 0.0);
(374972.6, 3740812.2, 43.0, 144.5, 0.0); (374992.6, 3740812.2, 42.8, 144.2, 0.0);
(375012.6, 3740812.2, 42.7, 142.6, 0.0); (375032.6, 3740812.2, 42.7, 138.4, 0.0);
(375052.6, 3740812.2, 42.6, 138.4, 0.0); (375072.6, 3740812.2, 42.5, 138.4, 0.0);
(375092.6, 3740812.2, 42.5, 138.4, 0.0); (374800.4, 3740647.0, 69.4, 138.4, 0.0);

(374978.7, 3740592.9, 52.1, 253.1, 0.0); (
374950.1, 3740721.5, 47.4, 252.7, 0.0);
(375257.8, 3740752.9, 43.6, 138.4, 0.0); (
374970.7, 3740628.7, 50.8, 253.1, 0.0);
(374972.0, 3740610.6, 51.6, 253.1, 0.0); (
375107.4, 3740418.8, 57.8, 138.4, 0.0);
(375042.5, 3740522.4, 50.8, 251.8, 0.0); (
375056.9, 3740482.5, 54.5, 138.4, 0.0);

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1
1   1 1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54,   3.09,   5.14,   8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

```
   Surface file:   KHHR_V9_ADJU\KHHR_v9.SFC
Met Version:  16216
   Profile file:   KHHR_V9_ADJU\KHHR_v9.PFL
   Surface format: FREE
   Profile format: FREE
   Surface station no.:     3167                  Upper air station no.: 3190
                  Name: UNKNOWN                                   Name: UNKNOWN
                  Year:   2012                                    Year: 2012
```

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
12	01	01	1	01	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.24	2.79	1.00	0.00	0.	7.9	283.8	2.0
12	01	01	1	02	-2.1	0.068	-9.000	-9.000	-999.	43.	13.3	0.24	2.79	1.00	0.53	305.	7.9	283.1	2.0
12	01	01	1	03	-9.0	0.127	-9.000	-9.000	-999.	109.	20.8	0.24	2.79	1.00	1.18	323.	7.9	282.5	2.0
12	01	01	1	04	-2.2	0.068	-9.000	-9.000	-999.	43.	13.3	0.24	2.79	1.00	0.53	296.	7.9	282.0	2.0
12	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.24	2.79	1.00	0.00	0.	7.9	281.4	2.0
12	01	01	1	06	-6.0	0.103	-9.000	-9.000	-999.	80.	16.7	0.24	2.79	1.00	0.97	321.	7.9	281.4	2.0
12	01	01	1	07	-4.3	0.088	-9.000	-9.000	-999.	63.	14.4	0.24	2.79	1.00	0.82	313.	7.9	280.4	2.0
12	01	01	1	08	15.7	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.24	2.79	0.55	0.00	0.	7.9	281.4	2.0
12	01	01	1	09	35.7	0.115	0.353	0.013	45.	93.	-3.8	0.24	2.79	0.32	0.63	179.	7.9	285.4	2.0
12	01	01	1	10	109.0	0.141	0.727	0.009	128.	127.	-2.3	0.24	2.79	0.24	0.70	170.	7.9	289.2	2.0
12	01	01	1	11	164.4	0.149	1.186	0.005	370.	138.	-1.8	0.24	2.79	0.21	0.70	222.	7.9	297.0	2.0
12	01	01	1	12	191.7	0.163	1.525	0.005	672.	158.	-2.1	0.24	2.79	0.20	0.79	12.	7.9	299.9	2.0
12	01	01	1	13	191.3	0.170	1.819	0.005	1144.	168.	-2.3	0.24	2.79	0.20	0.84	260.	7.9	300.9	2.0

```
 12 01 01   1 14  161.6  0.344  1.852  0.005 1428.  483.    -22.7  0.24
2.79   0.21    2.49  260.    7.9  298.8    2.0
 12 01 01   1 15  105.0  0.367  1.638  0.005 1521.  534.    -42.8  0.24
2.79   0.24    2.84  292.    7.9  293.8    2.0
 12 01 01   1 16   29.7  0.383  1.079  0.005 1539.  570.   -172.5  0.24
2.79   0.33    3.22  276.    7.9  290.4    2.0
 12 01 01   1 17  -24.8  0.287 -9.000 -9.000 -999.  374.     90.3  0.24
2.79   0.59    2.52  284.    7.9  289.2    2.0
 12 01 01   1 18  -26.7  0.269 -9.000 -9.000 -999.  336.     79.8  0.24
2.79   1.00    2.38  285.    7.9  287.5    2.0
 12 01 01   1 19  -10.2  0.137 -9.000 -9.000 -999.  133.     22.7  0.24
2.79   1.00    1.26  287.    7.9  287.5    2.0
 12 01 01   1 20   -6.2  0.106 -9.000 -9.000 -999.   83.     17.2  0.24
2.79   1.00    0.99  303.    7.9  287.0    2.0
 12 01 01   1 21   -7.6  0.117 -9.000 -9.000 -999.   96.     19.1  0.24
2.79   1.00    1.09  326.    7.9  286.4    2.0
 12 01 01   1 22   -6.8  0.110 -9.000 -9.000 -999.   88.     18.0  0.24
2.79   1.00    1.03  297.    7.9  285.9    2.0
 12 01 01   1 23  -19.9  0.200 -9.000 -9.000 -999.  214.     43.9  0.24
2.79   1.00    1.79  290.    7.9  285.9    2.0
 12 01 01   1 24  -19.6  0.196 -9.000 -9.000 -999.  209.     42.3  0.24
2.79   1.00    1.76  282.    7.9  285.9    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 12 01 01 01    7.9 1 -999.  -99.00   283.8   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) 373836.30	373936.30	374036.30	374136.30	374236.30	374336.30	374436.30	374536.30	374636.30
3741578.70	0.01908	0.02020	0.02138	0.02257	0.02363	0.02456	0.02525	0.02551	0.02521
3741478.70	0.02136	0.02282	0.02436	0.02596	0.02757	0.02903	0.03017	0.03080	0.03067
3741378.70	0.02233	0.02487	0.02808	0.03034	0.03264	0.03488	0.03688	0.03822	0.03847
3741278.70	0.02326	0.02544	0.02839	0.03321	0.03931	0.04282	0.04615	0.04886	0.05004
3741178.70	0.02415	0.02694	0.03062	0.03494	0.04227	0.05374	0.05964	0.06488	0.06808
3741078.70	0.02532	0.02919	0.03394	0.03994	0.04692	0.06225	0.07909	0.09009	0.09806
3740978.70	0.02665	0.03126	0.03709	0.04478	0.05504	0.06972	0.10102	0.13012	0.15110
3740878.70	0.02758	0.03286	0.03974	0.04935	0.06303	0.08498	0.12930	0.19441	0.25427
3740778.70	0.02779	0.03339	0.04118	0.05231	0.06917	0.09665	0.16594	0.24987	0.43718
3740678.70	0.02782	0.03344	0.04147	0.05344	0.07236	0.10522	0.15889	0.29144	0.74252
3740578.70	0.02784	0.03329	0.04095	0.05258	0.07063	0.10093	0.15977	0.29810	0.71460
3740478.70	0.02717	0.03243	0.03944	0.04948	0.06482	0.09022	0.13478	0.21808	0.40126
3740378.70	0.02625	0.03145	0.03801	0.04584	0.05811	0.07683	0.10552	0.15071	0.23667
3740278.70	0.02478	0.02803	0.03364	0.04398	0.06083	0.08236	0.09487	0.11680	0.17777

3740178.70	0.02272	0.02543	0.02934	0.03480	0.04242	0.05211	0.07199	0.13005	0.18151	
3740078.70	0.02037	0.02307	0.02714	0.03241	0.03876	0.04676	0.06723	0.09033	0.10145	
3739978.70	0.01830	0.02081	0.02373	0.02708	0.03102	0.03653	0.04607	0.06000	0.07401	
3739878.70	0.01707	0.01909	0.02126	0.02364	0.02680	0.03203	0.04062	0.05157	0.06020	
3739778.70	0.01592	0.01735	0.01889	0.02083	0.02389	0.02898	0.03644	0.04478	0.04987	
3739678.70	0.01461	0.01565	0.01691	0.01880	0.02200	0.02700	0.03336	0.04055	0.04937	
3739578.70	0.01329	0.01418	0.01549	0.01758	0.02089	0.02590	0.03593	0.04156	0.03551	

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) 374736.30	374836.30	374936.30	375036.30	375136.30	375236.30	375336.30	375436.30	375536.30
3741578.70	0.02438	0.02322	0.02201	0.02100	0.02026	0.01981	0.01963	0.01969	0.01998
3741478.70	0.02976	0.02828	0.02670	0.02538	0.02444	0.02396	0.02388	0.02416	0.02478
3741378.70	0.03748	0.03558	0.03345	0.03167	0.03053	0.03006	0.03023	0.03102	0.03235
3741278.70	0.04917	0.04666	0.04364	0.04120	0.03984	0.03963	0.04052	0.04241	0.04512
3741178.70	0.06784	0.06448	0.06004	0.05660	0.05520	0.05601	0.05884	0.06313	0.06793
3741078.70	0.10002	0.09556	0.08854	0.08380	0.08350	0.08782	0.09524	0.10313	0.10901
3740978.70	0.16084	0.15528	0.14383	0.13884	0.14503	0.15894	0.17235	0.17891	0.17749
3740878.70	0.29205	0.29107	0.27359	0.27903	0.30755	0.32936	0.32771	0.30556	0.27292
3740778.70	0.64866	0.70211	0.70910	0.76039	0.76991	0.69224	0.57703	0.46390	0.36886
3740678.70	1.79776	3.66802	3.49691	2.61781	1.78179	1.19684	0.81414	0.57079	0.41437
3740578.70	10.50356	18.57580	21.01227	5.97178	2.57911	1.35961	0.81474	0.53534	0.37559
3740478.70	0.81491	1.43550	4.64844	3.70716	1.51985	0.85686	0.54790	0.37997	0.27795
3740378.70	0.37362	0.48602	0.47298	0.51078	0.46867	0.36043	0.28082	0.22158	0.17769
3740278.70	0.24758	0.26628	0.22377	0.19161	0.23491	0.18075	0.14899	0.12697	0.10904

3740178.70 |	0.23179	0.24418	0.21674	0.19466	0.15820	0.11697	0.09745	0.08350	0.07251
3740078.70 |	0.14295	0.16732	0.15254	0.13840	0.09474	0.06104	0.06860	0.05656	0.05351
3739978.70 |	0.07973	0.08836	0.08528	0.10063	0.05582	0.04571	0.04008	0.04298	0.04262
3739878.70 |	0.06084	0.05890	0.06589	0.07266	0.06527	0.03828	0.03461	0.03628	0.03848
3739778.70 |	0.04844	0.04889	0.05400	0.05696	0.05249	0.03537	0.03143	0.03221	0.03233
3739678.70 |	0.04040	0.03837	0.04232	0.04595	0.03536	0.03158	0.02818	0.02526	0.02685
3739578.70 |	0.03388	0.03474	0.03439	0.03755	0.03529	0.02865	0.02402	0.02231	0.02180

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) 375636.30	375736.30	375836.30
3741578.70	0.02047	0.02118	0.02204
3741478.70	0.02572	0.02695	0.02834
3741378.70	0.03409	0.03610	0.03813
3741278.70	0.04811	0.05103	0.05335
3741178.70	0.07209	0.07488	0.07608
3741078.70	0.11143	0.11046	0.10678
3740978.70	0.16902	0.15655	0.14237
3740878.70	0.23750	0.20411	0.17463
3740778.70	0.29410	0.23670	0.19262
3740678.70	0.31060	0.23951	0.18939
3740578.70	0.27685	0.21181	0.16693
3740478.70	0.21164	0.16647	0.13414
3740378.70	0.14454	0.11966	0.10045
3740278.70	0.09434	0.08220	0.07211
3740178.70	0.06430	0.05737	0.05183
3740078.70	0.04810	0.04319	0.03923
3739978.70	0.04002	0.03535	0.03178
3739878.70	0.03536	0.03095	0.02749
3739778.70	0.03049	0.02792	0.02494
3739678.70	0.02561	0.02358	0.02226
3739578.70	0.02174	0.02159	0.02082

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
374612.56	3740352.22	0.19301	374632.56	3740352.22	0.21228
374652.56	3740352.22	0.23377	374672.56	3740352.22	0.25668
374692.56	3740352.22	0.28018	374712.56	3740352.22	0.30316
374732.56	3740352.22	0.32490	374752.56	3740352.22	0.34467
374772.56	3740352.22	0.36293	374792.56	3740352.22	0.38007
374612.56	3740372.22	0.20565	374632.56	3740372.22	0.22691
374652.56	3740372.22	0.25101	374672.56	3740372.22	0.27713
374692.56	3740372.22	0.30419	374712.56	3740372.22	0.33090
374732.56	3740372.22	0.35654	374752.56	3740372.22	0.38072
374772.56	3740372.22	0.40364	374792.56	3740372.22	0.42617
374612.56	3740392.22	0.22068	374632.56	3740392.22	0.24448
374652.56	3740392.22	0.27180	374672.56	3740392.22	0.30198
374692.56	3740392.22	0.33391	374712.56	3740392.22	0.36593
374732.56	3740392.22	0.39699	374752.56	3740392.22	0.42688
374772.56	3740392.22	0.45565	374612.56	3740412.22	0.23895
374632.56	3740412.22	0.26584	374652.56	3740412.22	0.29728

374672.56	3740412.22	0.33285
374692.56	3740412.22	0.37141
374712.56	3740412.22	0.41003
374732.56	3740412.22	0.44740
374752.56	3740412.22	0.48414
374612.56	3740432.22	0.26263
374632.56	3740432.22	0.29371
374652.56	3740432.22	0.33086
374672.56	3740432.22	0.37428
374692.56	3740432.22	0.42202
374712.56	3740432.22	0.47069
374732.56	3740432.22	0.51467
374752.56	3740432.22	0.55751
375092.56	3740432.22	1.04815
374612.56	3740452.22	0.29194
374632.56	3740452.22	0.32952
374652.56	3740452.22	0.37477
374672.56	3740452.22	0.42916
374692.56	3740452.22	0.49159
374712.56	3740452.22	0.55550
374732.56	3740452.22	0.60967
375092.56	3740452.22	1.41605
374612.56	3740472.22	0.32834
374632.56	3740472.22	0.37446
375072.56	3740472.22	2.23283
375092.56	3740472.22	1.91228
374612.56	3740492.22	0.37022
374632.56	3740492.22	0.42754
375052.56	3740492.22	3.84735
375072.56	3740492.22	3.01850
375092.56	3740492.22	2.47557
374612.56	3740512.22	0.41396
374632.56	3740512.22	0.48755
375052.56	3740512.22	4.79367
375072.56	3740512.22	3.69109
375092.56	3740512.22	2.98411
374612.56	3740532.22	0.45813
374632.56	3740532.22	0.55334
375032.56	3740532.22	6.96482
375052.56	3740532.22	5.23009
375072.56	3740532.22	4.11897
375092.56	3740532.22	3.35742
374612.56	3740552.22	0.49915
374632.56	3740552.22	0.61742
375012.56	3740552.22	8.95926
375032.56	3740552.22	6.76250
375052.56	3740552.22	5.31645
375072.56	3740552.22	4.30565

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: ALL   ***
INCLUDING SOURCE(S):   PAREA1   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_10   IN MICROGRAMS/M**3   **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
375092.56	3740552.22	3.56637	374612.56	3740572.22	0.53802
374632.56	3740572.22	0.66865	375012.56	3740572.22	8.09822
375032.56	3740572.22	6.37125	375052.56	3740572.22	5.16811
375072.56	3740572.22	4.28150	375092.56	3740572.22	3.60528
374612.56	3740592.22	0.57621	374632.56	3740592.22	0.71305
374652.56	3740592.22	0.90941	374672.56	3740592.22	1.25322
375012.56	3740592.22	7.20255	375032.56	3740592.22	5.82949
375052.56	3740592.22	4.83656	375072.56	3740592.22	4.08754
375092.56	3740592.22	3.49557	374612.56	3740612.22	0.61281
374632.56	3740612.22	0.75397	374652.56	3740612.22	0.94618
374672.56	3740612.22	1.22367	374692.56	3740612.22	1.69111
375012.56	3740612.22	6.20834	375032.56	3740612.22	5.15555
375052.56	3740612.22	4.37211	375072.56	3740612.22	3.75751
375092.56	3740612.22	3.26858	374612.56	3740632.22	0.63774
374632.56	3740632.22	0.78960	374652.56	3740632.22	0.97436
374672.56	3740632.22	1.21781	374692.56	3740632.22	1.54913

374712.56	3740632.22	2.03009
374732.56	3740632.22	2.72819
375012.56	3740632.22	5.11721
375032.56	3740632.22	4.38830
375052.56	3740632.22	3.81610
375072.56	3740632.22	3.34650
375092.56	3740632.22	2.96068
374612.56	3740652.22	0.62029
374632.56	3740652.22	0.77630
374652.56	3740652.22	0.96011
374672.56	3740652.22	1.19515
374692.56	3740652.22	1.45450
374712.56	3740652.22	1.78565
374732.56	3740652.22	2.26064
374752.56	3740652.22	2.87057
374772.56	3740652.22	3.73258
374792.56	3740652.22	4.84437
374812.56	3740652.22	6.14677
374832.56	3740652.22	7.62199
375012.56	3740652.22	4.04826
375032.56	3740652.22	3.60325
375052.56	3740652.22	3.22040
375072.56	3740652.22	2.89272
375092.56	3740652.22	2.60716
374612.56	3740672.22	0.57293
374632.56	3740672.22	0.72845
374652.56	3740672.22	0.92233
374672.56	3740672.22	1.10239
374692.56	3740672.22	1.29686
374712.56	3740672.22	1.54031
374732.56	3740672.22	1.86774
374752.56	3740672.22	2.23429
374772.56	3740672.22	2.72874
374792.56	3740672.22	3.31361
374812.56	3740672.22	3.95451
374892.56	3740672.22	4.30689
374912.56	3740672.22	4.20067
374972.56	3740672.22	3.59774
374992.56	3740672.22	3.35994
375012.56	3740672.22	3.12063
375032.56	3740672.22	2.87081
375052.56	3740672.22	2.64291
375072.56	3740672.22	2.42995
375092.56	3740672.22	2.23480
374612.56	3740692.22	0.52655
374632.56	3740692.22	0.65927
374652.56	3740692.22	0.84405
374672.56	3740692.22	1.01611

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
374692.56	3740692.22	1.15900	374712.56	3740692.22	1.31124
374732.56	3740692.22	1.50489	374752.56	3740692.22	1.73465
374772.56	3740692.22	2.02683	374792.56	3740692.22	2.35769
374812.56	3740692.22	2.51878	374832.56	3740692.22	2.58922
374852.56	3740692.22	2.61766	374872.56	3740692.22	2.66131
374892.56	3740692.22	2.69919	374912.56	3740692.22	2.71420
374972.56	3740692.22	2.55944	374992.56	3740692.22	2.46861
375052.56	3740692.22	2.12109	375072.56	3740692.22	1.99607
375092.56	3740692.22	1.87543	374612.56	3740712.22	0.48908
374632.56	3740712.22	0.59568	374652.56	3740712.22	0.73016
374672.56	3740712.22	0.89503	374692.56	3740712.22	1.04330
374712.56	3740712.22	1.14293	374732.56	3740712.22	1.25258
374752.56	3740712.22	1.40505	374772.56	3740712.22	1.57420
374792.56	3740712.22	1.65691	374812.56	3740712.22	1.69162
374832.56	3740712.22	1.71351	374852.56	3740712.22	1.75413
374872.56	3740712.22	1.79637	374892.56	3740712.22	1.83297

374912.56	3740712.22	1.85752
374972.56	3740712.22	1.84622
374992.56	3740712.22	1.82015
375012.56	3740712.22	1.78534
375032.56	3740712.22	1.73706
375052.56	3740712.22	1.68065
375072.56	3740712.22	1.61630
375092.56	3740712.22	1.54933
374612.56	3740732.22	0.45380
374632.56	3740732.22	0.53791
374652.56	3740732.22	0.63644
374672.56	3740732.22	0.75970
374692.56	3740732.22	0.86639
374712.56	3740732.22	0.95665
374732.56	3740732.22	1.04519
374752.56	3740732.22	1.12690
374772.56	3740732.22	1.18528
374792.56	3740732.22	1.21657
374812.56	3740732.22	1.23208
374832.56	3740732.22	1.24966
374852.56	3740732.22	1.27177
374872.56	3740732.22	1.29316
374892.56	3740732.22	1.31222
374912.56	3740732.22	1.32812
374612.56	3740752.22	0.42099
374632.56	3740752.22	0.48625
374652.56	3740752.22	0.55995
374672.56	3740752.22	0.64892
374692.56	3740752.22	0.72459
374712.56	3740752.22	0.78424
374732.56	3740752.22	0.84119
374752.56	3740752.22	0.88792
374772.56	3740752.22	0.91814
374792.56	3740752.22	0.93575
374812.56	3740752.22	0.94664
374832.56	3740752.22	0.95709
374852.56	3740752.22	0.96553
374872.56	3740752.22	0.97227
374892.56	3740752.22	0.97902
374912.56	3740752.22	0.98791
374952.56	3740752.22	1.00975
374972.56	3740752.22	1.02160
374992.56	3740752.22	1.03206
375012.56	3740752.22	1.04009
375032.56	3740752.22	1.04588
375052.56	3740752.22	1.04432
375072.56	3740752.22	1.03895
375092.56	3740752.22	1.02762

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE PERIOD (43848 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
374612.56	3740772.22	0.39134	374632.56	3740772.22	0.44091
374652.56	3740772.22	0.50123	374672.56	3740772.22	0.56614
374692.56	3740772.22	0.61153	374712.56	3740772.22	0.65080
374732.56	3740772.22	0.68502	374752.56	3740772.22	0.71380
374772.56	3740772.22	0.73230	374792.56	3740772.22	0.74507
374812.56	3740772.22	0.75104	374832.56	3740772.22	0.75484
374852.56	3740772.22	0.75424	374872.56	3740772.22	0.75448
374892.56	3740772.22	0.75604	374912.56	3740772.22	0.75989
374952.56	3740772.22	0.77564	374972.56	3740772.22	0.78597
374992.56	3740772.22	0.79760	375012.56	3740772.22	0.80867
375032.56	3740772.22	0.81896	375052.56	3740772.22	0.82696
375072.56	3740772.22	0.83173	375092.56	3740772.22	0.83225
374612.56	3740792.22	0.36504	374632.56	3740792.22	0.40593
374652.56	3740792.22	0.45239	374672.56	3740792.22	0.48828
374712.56	3740792.22	0.54689	374732.56	3740792.22	0.56850
374752.56	3740792.22	0.58550	374772.56	3740792.22	0.59846

374792.56	3740792.22	0.60567
374832.56	3740792.22	0.60839
374852.56	3740792.22	0.60536
374872.56	3740792.22	0.60265
374892.56	3740792.22	0.60072
374912.56	3740792.22	0.60151
374952.56	3740792.22	0.61001
374972.56	3740792.22	0.61834
374992.56	3740792.22	0.62743
375012.56	3740792.22	0.63862
375032.56	3740792.22	0.64949
375052.56	3740792.22	0.65960
375072.56	3740792.22	0.66855
375092.56	3740792.22	0.67480
374612.56	3740812.22	0.34349
374632.56	3740812.22	0.37181
374652.56	3740812.22	0.39795
374692.56	3740812.22	0.44548
374712.56	3740812.22	0.46395
374732.56	3740812.22	0.47858
374752.56	3740812.22	0.48982
374772.56	3740812.22	0.49760
374792.56	3740812.22	0.50068
374812.56	3740812.22	0.50168
374832.56	3740812.22	0.50046
374852.56	3740812.22	0.49726
374872.56	3740812.22	0.49344
374892.56	3740812.22	0.49015
374912.56	3740812.22	0.48832
374952.56	3740812.22	0.49148
374972.56	3740812.22	0.49666
374992.56	3740812.22	0.50363
375012.56	3740812.22	0.51213
375032.56	3740812.22	0.52209
375052.56	3740812.22	0.53225
375072.56	3740812.22	0.54156
375092.56	3740812.22	0.54976
374800.36	3740646.97	6.07129
374978.69	3740592.86	11.37132
374950.15	3740721.51	1.60116
375257.85	3740752.93	0.78135
374970.72	3740628.66	8.02211
374971.95	3740610.58	10.40058
375107.39	3740418.77	0.81623
375042.48	3740522.42	5.88038
375056.87	3740482.54	3.11341

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) 373836.30	373936.30	374036.30	374136.30	374236.30
3741578.7	13.71401 (16012908)	14.45936 (15021208)	16.38489 (15021208)	17.75903 (15021208)	18.03845 (15021208)
3741478.7	14.88353 (16012908)	16.00515 (16012908)	17.14300 (15021208)	19.34821 (15021208)	20.68294 (15021208)
3741378.7	30.24781 (12123108)	27.42266 (16012908)	19.00570 (16012908)	20.70464 (15021208)	23.23673 (15021208)
3741278.7	30.84317 (14010708)	33.80225 (12123108)	33.14038 (12123108)	37.10927 (16012908)	25.49067 (15021208)
3741178.7	31.23707 (12010208)	31.45831 (14010708)	36.11965 (12123108)	37.41040 (12123108)	45.98705 (16012908)
3741078.7	32.33733 (13012108)	32.73236 (13012108)	37.85568 (12010208)	41.04645 (12123108)	45.53181 (12123108)
3740978.7	27.72768 (13012108)	36.15290 (13012108)	41.57831 (13012108)	43.71822 (12010208)	48.62121 (12010208)
3740878.7	29.49007 (13021108)	32.20357 (13021108)	33.25003 (13012108)	46.28413 (13012108)	56.45367 (13012108)
3740778.7	21.39956 (13021108)	28.11583 (13021108)	35.85443 (13021108)	43.64117 (13021108)	49.76311 (13021108)
3740678.7	23.26729 (16012508)	25.12820 (16012508)	27.06049 (16012508)	29.10885 (16012508)	38.39727 (13021108)
3740578.7	32.31527 (12011008)	36.27561 (12011008)	41.58528 (12011008)	48.81737 (12011008)	58.43424 (12011008)
3740478.7	34.07958 (12011108)	37.36921 (12011108)	39.73457 (12011108)	45.51345 (12121308)	54.52536 (12121308)
3740378.7	29.73053 (12121308)	35.41458 (12013008)	42.73508 (12013008)	46.92103 (12013008)	51.66509 (12013008)
3740278.7	33.74141 (12013008)	32.59718 (12013008)	37.24045 (14112808)	56.56884 (14112808)	72.83822 (14112808)

3740178.7	32.51754 (14112808)	36.75633 (14112808)	39.29010 (14112808)	38.02012 (14112808)	36.06033 (13112908)
3740078.7	32.94493 (14112808)	31.63630 (14112808)	28.73347 (14112808)	32.93851 (12021008)	39.17257 (12021008)
3739978.7	21.09756 (16011308)	23.50405 (13112908)	26.90770 (12021008)	28.64931 (12021008)	29.56159 (14012208)
3739878.7	20.74728 (13021208)	23.76655 (12021008)	23.77567 (14120108)	25.62145 (14012208)	28.46395 (13010808)
3739778.7	20.85382 (12021008)	20.28347 (12120608)	22.64942 (14012208)	24.40705 (13010808)	24.95343 (13010808)
3739678.7	17.63348 (12120608)	20.13545 (14012208)	21.14127 (13010808)	22.61394 (13010808)	21.74581 (16012108)
3739578.7	18.10549 (14012208)	18.41002 (13010808)	20.37265 (13010808)	18.34839 (16012108)	23.66565 (13123008)

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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) 374336.30	374436.30	374536.30	374636.30	374736.30
3741578.7	18.75406 (15010808)	19.97386 (15010808)	19.57143 (15010808)	19.70729 (15020508)	21.29169 (14120908)
3741478.7	20.60053 (15021208)	22.47541 (15010808)	22.86248 (15010808)	22.56190 (12021708)	24.12363 (14120908)
3741378.7	24.32955 (15021208)	25.15340 (15010808)	26.83018 (15010808)	26.21298 (12021708)	27.56497 (14120908)
3741278.7	28.30435 (15021208)	28.84908 (15021208)	31.33100 (15010808)	31.35426 (15010808)	32.02270 (14120908)
3741178.7	32.11578 (15021208)	35.30696 (15021208)	36.52617 (15010808)	38.96340 (15010808)	37.95745 (15020508)
3741078.7	55.55721 (16012908)	41.60732 (15021208)	45.59404 (15021208)	49.09270 (15010808)	47.77291 (12021708)
3740978.7	59.78542 (12123108)	66.55803 (16012908)	57.29791 (15021208)	62.03898 (15010808)	65.00947 (15010808)
3740878.7	67.22237 (12010208)	90.83886 (12123108)	69.02460 (16012908)	87.58901 (15021208)	94.34242 (15010808)
3740778.7	65.92002 (13012108)	112.73195 (13012108)	130.45515 (12010208)	145.22733 (16012908)	147.33383 (15010808)
3740678.7	58.11142 (13021108)	80.99380 (13021108)	112.76930 (13012108)	240.95369 (13012108)	305.22539 (15021208)
3740578.7	71.97991 (12011008)	92.83647 (12011008)	130.00958 (12011008)	203.94488 (12011008)	723.04581 (12011108)
3740478.7	63.90574 (12121308)	82.81029 (12013008)	106.77482 (12013008)	145.05345 (14112808)	142.37439 (14112808)
3740378.7	61.73615 (14112808)	76.65168 (14112808)	75.44160 (14112808)	81.56681 (12021008)	99.41703 (13123008)
3740278.7	77.76305 (14112808)	66.23783 (12021008)	57.95231 (12021008)	77.80293 (13123008)	94.97641 (13123008)

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 3740178.7 |     43.36560 (12021008)     49.57591 (13112608)     78.26097
(13010808)     99.12926 (13123008)    104.44500 (12012408)
 3740078.7 |     39.18467 (13112608)     53.92413 (13010808)     69.14669
(13123008)     63.53997 (13123008)     83.00659 (12012408)
 3739978.7 |     33.73441 (13010808)     36.12786 (13123008)     47.17718
(13123008)     46.11392 (13120308)     49.20178 (12012408)
 3739878.7 |     27.80698 (13010808)     38.15435 (13123008)     38.36433
(13123008)     40.84240 (12012408)     42.65932 (12121408)
 3739778.7 |     28.45265 (13123008)     34.20079 (13123008)     35.16116
(13120308)     38.58007 (12012408)     38.82238 (12121408)
 3739678.7 |     29.12090 (13123008)     28.73951 (12012508)     33.34240
(12112308)     42.25551 (12012408)     35.95836 (12121408)
 3739578.7 |     27.97188 (13123008)     34.17225 (13120308)     35.83339
(12012408)     30.52023 (12012408)     32.11319 (12121408)
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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) 374836.30	374936.30	375036.30	375136.30	375236.30
3741578.7	22.82131 (14120908)	21.93634 (14010308)	21.97854 (14010308)	20.92970 (16120908)	19.38246 (16120908)
3741478.7	26.17088 (14120908)	25.30319 (14010308)	25.00446 (14010308)	23.64541 (16120908)	21.06544 (16120908)
3741378.7	30.38608 (14120908)	29.61328 (14010308)	28.68892 (14010308)	26.82229 (16120908)	24.97604 (13121708)
3741278.7	35.97440 (14120908)	35.24198 (14010308)	33.32334 (14010308)	30.42899 (16120908)	30.76039 (13121708)
3741178.7	43.60972 (14120908)	42.94133 (14010308)	39.87278 (16120908)	36.63688 (13121708)	37.44405 (13121708)
3741078.7	54.73074 (14120908)	53.85842 (14010308)	48.58418 (16120908)	47.69135 (13121708)	45.42018 (12021308)
3740978.7	71.48206 (14120908)	70.18208 (14010308)	61.78150 (13121708)	61.21454 (13121708)	55.30948 (12021308)
3740878.7	100.27627 (14120908)	96.96239 (14010308)	89.60005 (13121708)	80.45757 (12021308)	62.10866 (12021308)
3740778.7	156.98149 (14120908)	145.41354 (14010308)	132.99377 (12021308)	97.60830 (13020608)	77.01110 (13020608)
3740678.7	345.10015 (14120908)	299.32326 (13121708)	190.61440 (13020608)	121.80247 (13020608)	87.00219 (13010908)
3740578.7	524.63507 (12011108)	679.79994 (13010908)	268.99107 (13010908)	145.64591 (14011608)	95.27722 (14011608)
3740478.7	173.02862 (13123008)	564.76075 (12011908)	326.11576 (14021408)	157.61117 (14021408)	95.73493 (14021408)
3740378.7	108.80952 (12012408)	136.99691 (12121108)	206.63234 (12011908)	124.15827 (14012708)	91.14151 (14021408)
3740278.7	84.34744 (12121408)	95.38094 (12121108)	120.11460 (12011908)	89.83481 (13021508)	73.94631 (14012708)

3740178.7 | 107.37438 (12121408)   118.35063 (12121108)   99.79485
(13122408)   68.67569 (12011908)   81.71125 (15010708)
3740078.7 | 79.70585 (13020708)   82.48662 (12121108)   58.77890
(12121108)   89.22621 (12011908)   52.05274 (12020908)
3739978.7 | 61.52687 (13020708)   69.50704 (12121108)   47.95679
(12121108)   58.80452 (12011908)   47.12001 (12011908)
3739878.7 | 47.34084 (13020708)   57.04446 (13020708)   56.58006
(12121108)   53.61304 (13122408)   48.25328 (12011908)
3739778.7 | 44.54041 (13020708)   50.33866 (13020708)   50.57768
(12121108)   45.44315 (12120408)   46.00118 (12011908)
3739678.7 | 38.62596 (13020708)   44.16971 (13020708)   45.35545
(12121108)   39.46389 (12120408)   39.90979 (13122608)
3739578.7 | 37.16605 (13020708)   39.27448 (13020708)   41.26582
(12121108)   38.27337 (12121108)   36.11142 (13122608)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE   1ST HIGHEST 1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: ALL   ***
INCLUDING SOURCE(S):   PAREA1   ,

*** NETWORK ID: UCART1   ; NETWORK TYPE: GRIDCART ***

** CONC OF PM_10   IN MICROGRAMS/M**3   **

Y-COORD (METERS)	X-COORD (METERS) 375336.30	375436.30	375536.30	375636.30	375736.30
3741578.7	18.46708 (13121708)	19.28107 (13121708)	18.85349 (13121708)	18.24032 (12021308)	17.38402 (12021308)
3741478.7	21.95388 (13121708)	21.98722 (13121708)	21.07142 (12021308)	20.15254 (12021308)	18.40839 (12021308)
3741378.7	25.87321 (13121708)	24.71213 (12021308)	23.82031 (12021308)	21.63654 (12021308)	18.79153 (12021308)
3741278.7	30.05662 (13121708)	28.67699 (12021308)	26.03229 (12021308)	22.29395 (12021308)	20.29560 (13020608)
3741178.7	35.49300 (12021308)	32.10310 (12021308)	27.12071 (12021308)	24.69693 (13020608)	23.03085 (13020608)
3741078.7	41.07814 (12021308)	33.98936 (12021308)	30.88027 (13020608)	27.96600 (13020608)	24.50633 (13020608)
3740978.7	44.46560 (12021308)	39.72270 (13020608)	34.64585 (13020608)	29.09468 (13020608)	24.07794 (13123108)
3740878.7	53.62113 (13020608)	43.80536 (13020608)	34.76201 (13123108)	30.54476 (13123108)	26.70608 (13010908)
3740778.7	56.94209 (13020608)	46.91724 (13123108)	38.83096 (13010908)	32.38365 (13010908)	27.34684 (13011608)
3740678.7	63.98557 (13010908)	49.78920 (13120208)	40.56703 (13120208)	33.69699 (13120208)	28.47079 (13120208)
3740578.7	68.57816 (14011608)	52.50490 (14011608)	41.93580 (14011608)	34.59010 (14011608)	29.20481 (14011608)
3740478.7	66.51421 (13010308)	51.32379 (13010308)	41.24734 (14010208)	34.12625 (14010208)	28.92586 (14010208)
3740378.7	69.35434 (14021408)	53.24244 (14021408)	41.56565 (14021408)	32.92259 (14021408)	27.05297 (13010308)
3740278.7	58.68170 (13112208)	49.27159 (14021408)	41.57682 (14021408)	34.88680 (14021408)	29.35894 (14021408)

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 3740178.7 |     50.86637 (14012708)    42.27939 (14012708)     36.83243
(13112208)     32.21240 (14021408)    28.52477 (14021408)
 3740078.7 |     61.74386 (13021508)    64.70040 (14012708)     45.66254
(14012708)     28.55580 (13112208)    26.02143 (13112208)
 3739978.7 |     40.54494 (15010708)    46.29241 (13021508)     50.24707
(14012708)     26.71191 (14012708)    23.35366 (14012708)
 3739878.7 |     35.79457 (12011908)    41.81898 (15010708)     39.89958
(13021508)     24.05089 (13021508)    22.18869 (14012708)
 3739778.7 |     42.89096 (12011908)    35.89754 (12020908)     38.79227
(15010708)     33.44383 (13021508)    29.70397 (14012008)
 3739678.7 |     42.03745 (12011908)    32.91596 (12011908)     32.80630
(12020908)     32.99816 (15010708)    29.02317 (13021508)
 3739578.7 |     35.43662 (12011908)    34.56389 (12011908)     26.41457
(12011208)     28.63309 (12020908)    28.75204 (15010708)
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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** NETWORK ID: UCART1 ; NETWORK TYPE: GRIDCART ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) 375836.30
3741578.7	15.90728 (12021308)
3741478.7	16.15806 (12021308)
3741378.7	17.01820 (13020608)
3741278.7	19.33408 (13020608)
3741178.7	20.87633 (13020608)
3741078.7	21.03446 (13020608)
3740978.7	21.91152 (13123108)
3740878.7	23.44005 (13010908)
3740778.7	23.85584 (13120208)
3740678.7	24.43439 (13120208)
3740578.7	25.11036 (14011608)
3740478.7	24.91737 (14010208)
3740378.7	23.73769 (13010308)
3740278.7	24.83943 (14021408)
3740178.7	25.21816 (14021408)
3740078.7	23.31930 (14021408)
3739978.7	21.45125 (13112208)
3739878.7	19.87972 (14012708)
3739778.7	18.75677 (14012708)
3739678.7	29.06870 (14012008)
3739578.7	24.95509 (13021508)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
374612.56	3740352.22	73.26103	(12021008)	374632.56	3740352.22	74.33255	(13112608)
374652.56	3740352.22	76.46933	(13010808)	374672.56	3740352.22	80.28304	(13123008)
374692.56	3740352.22	86.35349	(13123008)	374712.56	3740352.22	90.64763	(13123008)
374732.56	3740352.22	93.74561	(13123008)	374752.56	3740352.22	95.84261	(13123008)
374772.56	3740352.22	96.77006	(13123008)	374792.56	3740352.22	96.02951	(13123008)
374612.56	3740372.22	80.14725	(12021008)	374632.56	3740372.22	79.26744	(12021008)
374652.56	3740372.22	79.77867	(13112608)	374672.56	3740372.22	81.42064	(13010808)
374692.56	3740372.22	88.44397	(13123008)	374712.56	3740372.22	93.62972	(13123008)
374732.56	3740372.22	97.46784	(13123008)	374752.56	3740372.22	100.49817	(13123008)
374772.56	3740372.22	102.67164	(13123008)	374792.56	3740372.22	103.48239	(13123008)
374612.56	3740392.22	86.40079	(12021008)	374632.56	3740392.22	86.80165	(12021008)
374652.56	3740392.22	86.09189	(12021008)	374672.56	3740392.22	85.95352	(13112608)
374692.56	3740392.22	90.66065	(13123008)	374712.56	3740392.22	97.05980	(13123008)
374732.56	3740392.22	101.66516	(13123008)	374752.56	3740392.22	105.44085	(13123008)
374772.56	3740392.22	108.69401	(13123008)	374612.56	3740412.22	91.18923	(12021008)
374632.56	3740412.22	93.62406	(12021008)	374652.56	3740412.22	94.37126	(12021008)

374672.56	3740412.22	93.89429	(12021008)
374692.56	3740412.22	93.08650	(13112608)
374712.56	3740412.22	100.87448	(13123008)
374732.56	3740412.22	106.41866	(13123008)
374752.56	3740412.22	110.92458	(13123008)
374612.56	3740432.22	104.54323	(14112808)
374632.56	3740432.22	102.59952	(14112808)
374652.56	3740432.22	102.14816	(12021008)
374672.56	3740432.22	103.25989	(12021008)
374692.56	3740432.22	103.05174	(12021008)
374712.56	3740432.22	105.03810	(13123008)
374732.56	3740432.22	111.93835	(13123008)
374752.56	3740432.22	117.06502	(13123008)
375092.56	3740432.22	178.65686	(14021408)
374612.56	3740452.22	120.59732	(14112808)
374632.56	3740452.22	120.43383	(14112808)
374652.56	3740452.22	119.06645	(14112808)
374672.56	3740452.22	116.99469	(14112808)
374692.56	3740452.22	114.61355	(14112808)
374712.56	3740452.22	114.29010	(12021008)
374732.56	3740452.22	118.67057	(13123008)
375092.56	3740452.22	194.27943	(14021408)
374612.56	3740472.22	135.09178	(14112808)
374632.56	3740472.22	138.74256	(14112808)
375072.56	3740472.22	233.77126	(14021408)
375092.56	3740472.22	204.62394	(14021408)
374612.56	3740492.22	143.57237	(14112808)
374632.56	3740492.22	154.19136	(14112808)
375052.56	3740492.22	286.74194	(14021408)
375072.56	3740492.22	240.50807	(14021408)
375092.56	3740492.22	206.64074	(14021408)
374612.56	3740512.22	148.14578	(12013008)
374632.56	3740512.22	159.54031	(14112808)
375052.56	3740512.22	277.88098	(14021408)
375072.56	3740512.22	232.01885	(14021408)
375092.56	3740512.22	198.50933	(14021408)
374612.56	3740532.22	153.59008	(12013008)
374632.56	3740532.22	170.60726	(12013008)
375032.56	3740532.22	318.33884	(13010308)
375052.56	3740532.22	262.80439	(13010308)
375072.56	3740532.22	223.95559	(13010308)
375092.56	3740532.22	194.67356	(13010308)
374612.56	3740552.22	174.05741	(12011108)
374632.56	3740552.22	193.36605	(12011108)
375012.56	3740552.22	355.60069	(14011608)
375032.56	3740552.22	294.45102	(14011608)
375052.56	3740552.22	250.12375	(14011608)
375072.56	3740552.22	216.58890	(14011608)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
375092.56	3740552.22	190.26454	(14011608)	374612.56	3740572.22	179.70822	(12011108)
374632.56	3740572.22	202.85732	(12011108)	375012.56	3740572.22	336.06812	(13010908)
375032.56	3740572.22	279.77325	(13010908)	375052.56	3740572.22	237.95117	(14011608)
375072.56	3740572.22	209.10909	(14011608)	375092.56	3740572.22	185.58606	(14011608)
374612.56	3740592.22	173.39196	(12011008)	374632.56	3740592.22	191.94180	(12011008)
374652.56	3740592.22	214.61396	(12011008)	374672.56	3740592.22	249.55451	(12011008)
375012.56	3740592.22	313.93096	(13010908)	375032.56	3740592.22	269.17891	(13010908)
375052.56	3740592.22	232.65087	(13010908)	375072.56	3740592.22	202.88024	(13010908)
375092.56	3740592.22	178.30580	(13010908)	374612.56	3740612.22	158.57831	(13021108)
374632.56	3740612.22	180.43032	(13021108)	374652.56	3740612.22	204.27179	(13021108)
374672.56	3740612.22	229.68914	(13021108)	374692.56	3740612.22	268.77380	(13012108)
375012.56	3740612.22	285.77896	(13123108)	375032.56	3740612.22	250.74007	(13010908)
375052.56	3740612.22	221.45572	(13010908)	375072.56	3740612.22	196.31878	(13010908)
375092.56	3740612.22	175.10713	(13010908)	374612.56	3740632.22	187.22073	(13021108)
374632.56	3740632.22	209.26154	(13021108)	374652.56	3740632.22	237.67131	(13012108)
374672.56	3740632.22	265.62938	(13012108)	374692.56	3740632.22	289.64643	(13012108)

374712.56	3740632.22	317.10354	(13012108)
374732.56	3740632.22	357.14453	(13012108)
375012.56	3740632.22	262.96718	(13020608)
375032.56	3740632.22	230.31869	(13020608)
375052.56	3740632.22	205.51701	(13123108)
375072.56	3740632.22	185.23326	(13123108)
375092.56	3740632.22	167.71537	(13010908)
374612.56	3740652.22	202.54089	(13012108)
374632.56	3740652.22	241.05081	(13012108)
374652.56	3740652.22	271.31364	(13012108)
374672.56	3740652.22	297.50022	(13012108)
374692.56	3740652.22	308.50530	(13012108)
374712.56	3740652.22	317.22978	(13012108)
374732.56	3740652.22	337.73374	(12010208)
374752.56	3740652.22	366.32424	(12123108)
374772.56	3740652.22	410.05740	(15021208)
374792.56	3740652.22	452.05429	(15021208)
374812.56	3740652.22	463.13602	(15010808)
374832.56	3740652.22	478.84040	(14010308)
375012.56	3740652.22	240.98904	(13020608)
375032.56	3740652.22	216.98514	(13020608)
375052.56	3740652.22	194.45012	(13020608)
375072.56	3740652.22	173.89558	(13020608)
375092.56	3740652.22	157.55421	(13123108)
374612.56	3740672.22	204.87677	(13012108)
374632.56	3740672.22	241.16519	(13012108)
374652.56	3740672.22	263.68528	(13012108)
374672.56	3740672.22	276.26214	(13012108)
374692.56	3740672.22	286.55596	(12010208)
374712.56	3740672.22	297.95772	(12123108)
374732.56	3740672.22	315.23188	(12123108)
374752.56	3740672.22	340.38729	(15021208)
374772.56	3740672.22	371.01023	(15021208)
374792.56	3740672.22	363.71012	(15010808)
374812.56	3740672.22	371.39771	(15010808)
374892.56	3740672.22	351.30494	(14010308)
374912.56	3740672.22	329.30762	(13121708)
374972.56	3740672.22	278.15497	(12021308)
374992.56	3740672.22	250.00240	(12021308)
375012.56	3740672.22	221.75367	(12021308)
375032.56	3740672.22	199.57001	(13020608)
375052.56	3740672.22	183.05136	(13020608)
375072.56	3740672.22	166.90245	(13020608)
375092.56	3740672.22	151.62590	(13020608)
374612.56	3740692.22	195.13782	(13012108)
374632.56	3740692.22	220.32822	(13012108)
374652.56	3740692.22	231.42640	(12010208)
374672.56	3740692.22	237.78688	(12123108)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
374692.56	3740692.22	257.71121	(12123108)	374712.56	3740692.22	267.33567	(12123108)
374732.56	3740692.22	287.41696	(15021208)	374752.56	3740692.22	307.68155	(15021208)
374772.56	3740692.22	288.67914	(15021208)	374792.56	3740692.22	301.59649	(15010808)
374812.56	3740692.22	296.63864	(15010808)	374832.56	3740692.22	292.41798	(14120908)
374852.56	3740692.22	295.21961	(14010308)	374872.56	3740692.22	294.97026	(14010308)
374892.56	3740692.22	286.60371	(14010308)	374912.56	3740692.22	268.75160	(14010308)
374972.56	3740692.22	244.20545	(12021308)	374992.56	3740692.22	226.18399	(12021308)
375052.56	3740692.22	168.90771	(13020608)	375072.56	3740692.22	156.97951	(13020608)
375092.56	3740692.22	145.20897	(13020608)	374612.56	3740712.22	182.29565	(12010208)
374632.56	3740712.22	202.19013	(12010208)	374652.56	3740712.22	210.36222	(12123108)
374672.56	3740712.22	175.17292	(12123108)	374692.56	3740712.22	189.55953	(15021208)
374712.56	3740712.22	210.41859	(15021208)	374732.56	3740712.22	227.57051	(15021208)
374752.56	3740712.22	239.75558	(15021208)	374772.56	3740712.22	247.20587	(15010808)
374792.56	3740712.22	248.28317	(15010808)	374812.56	3740712.22	237.48265	(15010808)
374832.56	3740712.22	238.03440	(14120908)	374852.56	3740712.22	244.67175	(14010308)
374872.56	3740712.22	248.05672	(14010308)	374892.56	3740712.22	243.69782	(14010308)

374912.56	3740712.22	231.23333	(14010308)
374972.56	3740712.22	213.46517	(12021308)
374992.56	3740712.22	202.74342	(12021308)
375012.56	3740712.22	189.03826	(12021308)
375032.56	3740712.22	173.47176	(12021308)
375052.56	3740712.22	157.43144	(12021308)
375072.56	3740712.22	145.44484	(13020608)
375092.56	3740712.22	136.86847	(13020608)
374612.56	3740732.22	173.35328	(12010208)
374632.56	3740732.22	188.00590	(12123108)
374652.56	3740732.22	190.22398	(12123108)
374672.56	3740732.22	158.26958	(15021208)
374692.56	3740732.22	174.47838	(15021208)
374712.56	3740732.22	189.41006	(15021208)
374732.56	3740732.22	201.41239	(15021208)
374752.56	3740732.22	206.46696	(15021208)
374772.56	3740732.22	210.02164	(15010808)
374792.56	3740732.22	207.67377	(15010808)
374812.56	3740732.22	198.65209	(15010808)
374832.56	3740732.22	205.64947	(14120908)
374852.56	3740732.22	210.59872	(14010308)
374872.56	3740732.22	214.30779	(14010308)
374892.56	3740732.22	211.41433	(14010308)
374912.56	3740732.22	202.13441	(14010308)
374612.56	3740752.22	167.27802	(12123108)
374632.56	3740752.22	171.39799	(12123108)
374652.56	3740752.22	167.46955	(16012908)
374672.56	3740752.22	148.94002	(15021208)
374692.56	3740752.22	160.84292	(15021208)
374712.56	3740752.22	169.41508	(15021208)
374732.56	3740752.22	175.47624	(15021208)
374752.56	3740752.22	178.09512	(15010808)
374772.56	3740752.22	181.00034	(15010808)
374792.56	3740752.22	178.37766	(15010808)
374812.56	3740752.22	174.46548	(14120908)
374832.56	3740752.22	181.74057	(14120908)
374852.56	3740752.22	184.37419	(14010308)
374872.56	3740752.22	187.75225	(14010308)
374892.56	3740752.22	185.81770	(14010308)
374912.56	3740752.22	179.06968	(14010308)
374952.56	3740752.22	169.19440	(13121708)
374972.56	3740752.22	166.83160	(13121708)
374992.56	3740752.22	161.92722	(12021308)
375012.56	3740752.22	156.80769	(12021308)
375032.56	3740752.22	149.56864	(12021308)
375052.56	3740752.22	140.50360	(12021308)
375072.56	3740752.22	130.70762	(12021308)
375092.56	3740752.22	120.45524	(12021308)

*** AERMOD - VERSION 16216r ***   *** C:\Lakes\AERMOD View\SolanaTorrance\SolanaTorrance.isc   ***   02/26/18
*** AERMET - VERSION 16216 ***   ***   ***   15:59:23

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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE   1ST HIGHEST 1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP: ALL   ***
INCLUDING SOURCE(S):   PAREA1   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_10   IN MICROGRAMS/M**3   **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
374612.56	3740772.22	152.77997	(12123108)	374632.56	3740772.22	151.27928	(16012908)
374652.56	3740772.22	128.42627	(15021208)	374672.56	3740772.22	139.38356	(15021208)
374692.56	3740772.22	147.38738	(15021208)	374712.56	3740772.22	151.62200	(15021208)
374732.56	3740772.22	152.95703	(15021208)	374752.56	3740772.22	157.18285	(15010808)
374772.56	3740772.22	158.59256	(15010808)	374792.56	3740772.22	156.39701	(15010808)
374812.56	3740772.22	155.91298	(14120908)	374832.56	3740772.22	162.12116	(14120908)
374852.56	3740772.22	163.53113	(14120908)	374872.56	3740772.22	165.90073	(14010308)
374892.56	3740772.22	165.05388	(14010308)	374912.56	3740772.22	160.23883	(14010308)
374952.56	3740772.22	149.39138	(13121708)	374972.56	3740772.22	149.19989	(13121708)
374992.56	3740772.22	146.01308	(13121708)	375012.56	3740772.22	142.25682	(12021308)
375032.56	3740772.22	137.63942	(12021308)	375052.56	3740772.22	131.36833	(12021308)
375072.56	3740772.22	123.95634	(12021308)	375092.56	3740772.22	115.79885	(12021308)
374612.56	3740792.22	131.85545	(16012908)	374632.56	3740792.22	112.46799	(15021208)
374652.56	3740792.22	121.73955	(15021208)	374672.56	3740792.22	129.29184	(15021208)
374712.56	3740792.22	136.10855	(15021208)	374732.56	3740792.22	136.83827	(15010808)
374752.56	3740792.22	140.22332	(15010808)	374772.56	3740792.22	140.99227	(15010808)

374792.56	3740792.22	138.23320	(15010808)
374832.56	3740792.22	145.46292	(14120908)
374852.56	3740792.22	146.74080	(14120908)
374872.56	3740792.22	148.16382	(14010308)
374892.56	3740792.22	147.91777	(14010308)
374912.56	3740792.22	144.57737	(14010308)
374952.56	3740792.22	132.36316	(13121708)
374972.56	3740792.22	133.87995	(13121708)
374992.56	3740792.22	132.51809	(13121708)
375012.56	3740792.22	129.09427	(13121708)
375032.56	3740792.22	126.41183	(12021308)
375052.56	3740792.22	122.20963	(12021308)
375072.56	3740792.22	116.81015	(12021308)
375092.56	3740792.22	110.48195	(12021308)
374612.56	3740812.22	99.73186	(15021208)
374632.56	3740812.22	107.43351	(15021208)
374652.56	3740812.22	114.13000	(15021208)
374692.56	3740812.22	122.01220	(15021208)
374712.56	3740812.22	122.07739	(15021208)
374732.56	3740812.22	124.76100	(15010808)
374752.56	3740812.22	126.74105	(15010808)
374772.56	3740812.22	126.36509	(15010808)
374792.56	3740812.22	122.94780	(15010808)
374812.56	3740812.22	127.15148	(14120908)
374832.56	3740812.22	131.69554	(14120908)
374852.56	3740812.22	133.12497	(14120908)
374872.56	3740812.22	133.77529	(14010308)
374892.56	3740812.22	134.01563	(14010308)
374912.56	3740812.22	131.52666	(14010308)
374952.56	3740812.22	119.34095	(14010308)
374972.56	3740812.22	120.44647	(13121708)
374992.56	3740812.22	120.58602	(13121708)
375012.56	3740812.22	118.68884	(13121708)
375032.56	3740812.22	115.89136	(12021308)
375052.56	3740812.22	113.42612	(12021308)
375072.56	3740812.22	109.61131	(12021308)
375092.56	3740812.22	104.82702	(12021308)
374800.36	3740646.97	478.93668	(15021208)
374978.69	3740592.86	430.15507	(13123108)
374950.15	3740721.51	208.51197	(13121708)
375257.85	3740752.93	73.29405	(13020608)
374970.72	3740628.66	370.51306	(12021308)
374971.95	3740610.58	407.30611	(13020608)
375107.39	3740418.77	157.12101	(14021408)
375042.48	3740522.42	291.87252	(13010308)
375056.87	3740482.54	271.74642	(14021408)

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                         *** THE SUMMARY OF MAXIMUM PERIOD ( 43848 HRS) RESULTS ***

                         ** CONC OF PM_10    IN MICROGRAMS/M**3                **

NETWORK
GROUP ID                 AVERAGE CONC              RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS      21.01227 AT (  374936.30, 3740578.70,    61.80,   138.40,    0.00)  GC  UCART1
          2ND HIGHEST VALUE IS      18.57580 AT (  374836.30, 3740578.70,    48.90,   255.60,    0.00)  GC  UCART1
          3RD HIGHEST VALUE IS      11.37132 AT (  374978.69, 3740592.86,    52.06,   253.11,    0.00)  DC
          4TH HIGHEST VALUE IS      10.50356 AT (  374736.30, 3740578.70,    65.10,   255.50,    0.00)  GC  UCART1
          5TH HIGHEST VALUE IS      10.40058 AT (  374971.95, 3740610.58,    51.64,   253.11,    0.00)  DC
          6TH HIGHEST VALUE IS       8.95926 AT (  375012.56, 3740552.22,    51.07,   253.47,    0.00)  DC
          7TH HIGHEST VALUE IS       8.09822 AT (  375012.56, 3740572.22,    49.93,   254.01,    0.00)  DC
          8TH HIGHEST VALUE IS       8.02211 AT (  374970.72, 3740628.66,    50.76,   253.11,    0.00)  DC
          9TH HIGHEST VALUE IS       7.62199 AT (  374832.56, 3740652.22,    65.22,   138.42,    0.00)  DC
         10TH HIGHEST VALUE IS       7.20255 AT (  375012.56, 3740592.22,    49.29,   252.72,    0.00)  DC

 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
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 *** AERMOD - VERSION 16216r ***   *** C:\Lakes\AERMOD
View\SolanaTorrance\SolanaTorrance.isc              ***        02/26/18
 *** AERMET - VERSION  16216 ***   ***
***        15:59:23

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                                *** THE SUMMARY OF
HIGHEST  1-HR RESULTS ***


                                   ** CONC OF PM_10    IN
MICROGRAMS/M**3                         **

                                                      DATE
NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)
RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS     723.04581  ON 12011108: AT (
374736.30,  3740578.70,    65.10,   255.50,    0.00)  GC  UCART1


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of   0 Fatal Error Message(s)
A Total of   2 Warning Message(s)
A Total of   1474 Informational Message(s)

A Total of   43848 Hours Were Processed

A Total of   1223 Calm Hours Identified

A Total of   251 Missing Hours Identified (0.57 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

********   WARNING MESSAGES   ********
ME W186   190   MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used   0.50
ME W187   190   MEOPEN: ADJ_U* Option for Low Winds used in AERMET

****
*** AERMOD Finishes Successfully ***
****

Solana Torrance - Construction Health Risk Assessment - Residential Receptors - Cancer Risk

*HARP - HRACalc v17023 2/27/2018 12:01:23 PM - Cancer Risk - Input File: C:\HARP2\HARP2 Runs\SOLANA_TORRANCE_RESIDENTIAL\hra\Construction_Residential_HRAInput.hra

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK	SOIL_RISK	DERMAL_RISK	MMILK_RISK	WATER_RISK	FISH_RISK	CROP_RISK	BEEF_RISK	DAIRY_RISK	PIG_RISK	CHICKEN_RISK	EGG_RISK
512	ALL		375032.6	3740532	4.53E-06	3YrCancerI	4.53E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Solana Torrance - Construction Health Risk Assessment - Residential Receptors - Chronic Risk

*HARP - HRACalc v17023 2/27/2018 12:01:23 PM - Chronic Risk - Input File: C:\HARP2\HARP2 Runs\SOLANA_TORRANCE_RESIDENTIAL\hra\Construction_Residential_HRAInput.hra

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	SKIN	EYE	BONE/TEETH	ENDO	BLOOD	ODOR	GENERAL	MAXHI
512	ALL		375032.6	3740532	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.38E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.38E-03

Solana Torrance - Construction Health Risk Assessment - Worker Receptors - Cancer Risk

*HARP - HRACalc v17023 2/27/2018 12:46:13 PM - Cancer Risk - Input File: C:\HARP2\HARP2 Runs\SOLANA_TORRANCE_WORKER\hra\Construction_Worker_HRAInput.hra

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK	SOIL_RISK	DERMAL_RISK	MMILK_RISK	WATER_RISK	FISH_RISK	CROP_RISK	BEEF_RISK	DAIRY_RISK	PIG_RISK	CHICKEN_RISK	EGG_RISK
752	ALL		374978.7	3740593	1.50E-07	3YrCancerI	1.50E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Solana Torrance - Construction Health Risk Assessment - Worker Receptors - Chronic Risk

*HARP - HRACalc v17023 2/27/2018 12:46:13 PM - Chronic Risk - Input File: C:\HARP2\HARP2 Runs\SOLANA_TORRANCE_WORKER\hra\Construction_Worker_HRAInput.hra

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	SKIN	EYE	BONE/TEETH	ENDO	BLOOD	ODOR	GENERAL	MAXHI
752	ALL		374978.7	3740593	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.88E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.88E-03

Solana Torrance - Construction Health Risk Assessment - School Receptor - Cancer Risk

*HARP - HRACalc v17023 2/27/2018 12:26:53 PM - Cancer Risk - Input File: C:\HARP2\HARP2 Runs\SOLANA_TORRANCE_SCHOOL\hra\Construction_School_HRAInput.hra

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INH_RISK	SOIL_RISK	DERMAL_RISK	MMILK_RISK	WATER_RISK	FISH_RISK	CROP_RISK	BEEF_RISK	DAIRY_RISK	PIG_RISK	CHICKEN_RISK	EGG_RISK
754	ALL		375257.9	3740753	1.16E-07	3YrCancerI	1.16E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Solana Torrance - Construction Health Risk Assessment - School Receptor - Chronic Risk

*HARP - HRACalc v17023 2/27/2018 12:26:53 PM - Chronic Risk - Input File: C:\HARP2\HARP2 Runs\SOLANA_TORRANCE_SCHOOL\hra\Construction_School_HRAInput.hra

REC	GRP	NETID	X	Y	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL	RESP	SKIN	EYE	BONE/TEETH	ENDO	BLOOD	ODOR	GENERAL	MAXHI
754	ALL		375257.9	3740753	NonCancer	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.67E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.67E-04